SIXTH DAY.

Senate Chamber,
Austin, Texas,
July 22, 1931.

The Senate met at 10 o'clock a. m., pursuant to adjournment, and was called to order by President Pro Tem Tom DeBerry.

The roll was called, a quorum being present, the following Senators answering to their names:

Beck.	Parr.
Berkeley.	Patton.
Cousins.	Parrish.
Cunningham.	Poage.
Deberry.	Pollard.
Gainer.	Purl.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hopkins.	Stevenson.
Hornsby.	Thomason.
Loy.	Williamson.
Martin.	Woodruff.
Moore.	Woodul.
Neal.	Woodward.
Oneal.	

Prayer by the Chaplain.

Pending the reading of the Journal of yesterday, the same was dispensed with on motion of Senator Woodward.

Petitions and Memorials.

(See Appendix.)

Committee Reports.

(See Appendix.)

Seating Arrangement.

Senator Pollard moved that the Sergeant-at-Arms be instructed to re-arrange the desks of the Senators in a semi-circle about the tables in the center of the room, in as nearly their original position as possible, for the purpose of the convenience of the Senators in the hearing on oil conditions.

The motion prevailed.

Senate Bill No. 8.

Senator Hornsby received unanimous consent to take up the following bill:

By Senator Hornsby:

S. B. No. 8, A bill to be entitled "An Act amending H. B. No. 1036 passed by the Regular Session of the Forty-second Legislature, Chapter 187, page 374, Acts of the Forty-second Legislature, prescribing the kind of tackle and method of taking fish in certain fresh waters in certain counties and prohibiting all other tackle; prohibiting possession of any tackle not authorized by this Act within two hundred yards of any fresh waters mentioned herein; exempting the waters of the Colorado and Rio Grande Rivers from the provision of this Act prohibiting the sale, offering for sale or having in possession for the purpose of sale of certain species in said counties; providing a closed season for a period of time when it shall be unlawful to take fresh water fish; making it unlawful to possess certain species of fish of less length than specified in this Act; prescribing a penalty; repealing all laws and parts of laws in conflict with this Act, except H. B. 610, Chapter 90, Acts of Regular Session, Forty-second Legislature; and declaring an emergency."

The rule requiring committee reports to lie over twenty-four hours was suspended by a four-fifths vote.

The committee report was adopted.

The bill was read second time and passed to engrossment.

On motion of Senator Hornsby the constitutional rule requiring bills to be read on three several days was suspended and S. B. No. 8 was put on its third reading and final passage, by the following vote:

Yeas—30.

Beck.	Parr.
Berkeley.	Parrish.
Cousins.	Patton.
Cunningham.	Poage.
DeBerry.	Pollard.
Gainer.	Purl.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodul.
Oneal.	Woodward.

Absent.

Hopkins.

Read third time and finally passed by the following vote:

Yeas—30.

Beck.	Parr.
Berkeley.	Parrish.
Cousins.	Patton.
Cunningham.	Poage.
DeBerry.	Pollard.
Gainer.	Purl.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodul.
Oneal.	Woodward.

Absent.

Hopkins.

At Ease.

On motion of Senator Woodruff, the Senate, at 9:47 o'clock a. m., stood at ease until 4 o'clock p. m.

In Session.

The Senate was called to order by President Pro Tem Tom DeBerry.

REASON FOR VOTE ON SIMPLE RESOLUTION NO. 8.

In voting "No" on this Resolution, I am not opposed to the investigation of the petroleum industry to ascertain whether or not the anti-trust laws of this State are being violated by the major oil companies, but I am heartily in favor of it. I personally think that there exists a monopoly, and that the major oil companies are now, and have been for a long time, controlling the price of petroleum products in Texas, probably in violation of our anti-trust laws.

But several days prior to the time this Resolution was voted on in the Senate, a similar Resolution was passed in the House, which is now organized and working on the investigation, several witnesses having been called before that Body. The purpose of the investigation in the House is the same as that expressed in the Resolution voted on in the Senate, and this investigation in the Senate will entail a great deal of expense and unecessary delay, duplicating the work of the House.

Furthermore, when this Session was first convened, I talked to a member of the Attorney General's staff concerning an investigation of the oil companies and was advised by him that the Attorney General's Department had been working on this matter for several months, preparatory to filing anti-trust suits, and that it was the opinion that the investigation proposed by this Resolution would tend to hinder rather than aid the investigation by the Attorney General.

Soon after the House organized its Investigating Committee, it passed a Resolution inviting the Senate to attend and to participate in the hearing. The Senate by unanimous vote accepted this invitation.

The investigation now being conducted by the House is probably costing the tax-payers $2,500.00 per day. The proposed investigation in the Senate under this Resolution will cost in the same proportion. Therefore, I think that the investigation in the Senate, being a duplication of that now being carried on in the House, will entail an unnecessary expense to the tax-payers of this State. I am in favor of a strict investigation, but believe it should be conducted by other agencies of the Government that could carry on such investigation more efficiently and more effectively, and come nearer accomplishing the results desired.

The resolution provides that the Committee is empowered to summons witnesses without limit as to number, from any place in the State, and said witnesses "shall be allowed the same mileage and per diem as is allowed witnesses in the trial of cases in the Criminal District Court." The expense of this can not be even estimated.

I did not think it necessary under the circumstances to have two investigating bodies functioning at the same time, with a duplication of expense to the tax-payers of Texas.

Inasmuch as the Governor of Texas saw fit to call us in extraordinary session to prevent the waste of one of Texas most valuable natural resources, crude oil, I thought it fair to the Governor that the Senate should turn its attention to the consideration of the bills designed to correct the alleged waste, rather than devoting its time to making an investigation and duplicating the work of the House.

RAWLINGS.

Adjournment.

On motion of Senator Stevenson, the Senate, at 4:10 o'clock p. m., adjourned until 9 o'clock tomorrow morning.

APPENDIX.

Committee on Engrossed Bills.

Committee Room,
Austin, Texas, July 22, 1931.

Hon. Edgar E. Witt, President of the Senate.

Sir: We, your Committee on Engrossed Bills, have had S. B. No. 8, carefully examined and compared and find same correctly engrossed.

HARDIN, Chairman.

Committee Reports.

Committee Room,
Austin, Texas, July 22, 1931.

Honorable Edgar Witt, President of the Senate.

Sir: We, your Committee on State Affairs, to whom was referred

S. B. No. 8, A bill to be entitled "An Act amending H. B. No. 1036 passed by the Regular Session of the 42nd Legislature, Chapter 187, page 374, Acts of the 42nd Legislature prescribing the kind of tackle and method of taking fish in certain fresh waters in certain counties and prohibiting all other tackle; prohibiting possession of any tackle not authorized by this Act within two hundred yards of any fresh waters mentioned herein; exempting the waters of the Colorado and Rio Grande Rivers from the provision of this Act prohibiting the sale, offering for sale or having in possession for the purpose of sale of certain species in said counties; providing a closed season for a period of time when it shall be unlawful to possess certain species of fish of less length than specified in this Act; prescribing a penalty; repealing all laws and parts of laws in conflict wtih this Act, except H. B. 610, Chapter 90, Acts of the Regular Session 42nd Legislature; and declaring an emergency."

Have had the same under consideration, and I am instructed to report it back to the Senate with the recommendation that it do pass and be not printed.

MOORE, Chairman.

TRANSCRIPT OF TESTIMONY.

Proceedings of the Senate of Texas, First Called Session, Forty-second Legislature.

S. R. No. 8, Relating to the oil industry, pipe lines, and kindred businesses.

Wednesday, July 22, 1931,
10 o'clock A. M.

Senator Moore: We are honored with the presence of Governor Sterling who has come on invitation of the Committee to discuss with the committee and the Senate as a whole the provisions of the Woodward Bill, or any other question relating to the question of conservation of oil and gas or other natural resources in the State. I will ask Senator Woodward, Senator Rawlings and Senator Berkeley to escort the Governor to the Chair. Now, Governor, I want to say this for the committee and the Senate as a whole, that we invited you here out of consideration of your information on the question we have in hand and I want you to proceed as you see fit with respect to the bill that is now before the committee, discuss this matter in any way that you see fit. The bill that is now under consideration is the Woodward Bill, No. 8, with respect to conservation of the natural resources of the State.

Senator Woodward: As I understand it, the Governor is not confined to this bill. He can discuss this bill and wind up on the weather, if he wants to.

Governor Sterling: It has been quite a little while since I was active in the oil business, and consequently there are many things and methods in connection with the oil business that have been inaugurated since I was in the oil business. It goes without saying that the oil business, the oil industry today, is in a real bad plight, as well as nearly every other industry in this country. I do think, however, that the oil business is suffering more than any other industry, more than agriculture, because if you will take a fair price for cotton at ten or fifteen cents a pound, and take ten per cent off of that, you will have a cent and a half, or one cent a pound, for your cotton. Oil at one dollar per barrel, which everybody recognizes and believes is no more than it should bring, if you have oil selling at ten per cent of that price, that is ten cents per barrel, then we would have a greater calamity in this country, more so than we have today, if cotton was selling at one and a half cents a pound. But I really believe that the oil industry is suffering more than any other industry in the State today. Every State

in the Union that produces oil has conservation laws, laws that they claim are enforceable. Our Railroad Commission, who is charged with the duty of enforcing the conservation law in reference to oil says that the law at the present time is ineffective, that they cannot enforce it. I think that everybody, everyone of you Senators and Representatives, realize that that is a fact. Therefore, I believe that it is very necessary that some legislation be enacted whereby this industry may be relieved from the position that it is in now. I have given this question a great deal of study in the last few months. Volumes or stacks of telegrams and letters, people urging that something be done, from every section of the State. Chambers of commerce from sections of the State that are not interested in oil, believe that they are indirectly affected by the plight that the oil industry is in, urging that same legislation be enacted to improve the situation. I have read several of the bills proposed, some that have been introduced, and while I have not prepared a bill or been the author of any particular bill, I believe that in the wisdom of the Legislature they will work out something that will be beneficial. Primarily and fundamentally,—go back a few years,—I will say that I am opposed to too much government in business, but conditions have changed to where it looks as though we must have government in business, we must have more regulation in every walk of life, so that is really the sign of the times and we will have to forget what we used to believe was improper and we have got to look forth to that which will be the greatest good to the greatest number. I think that the greatest thing that is wrong with the oil industry, the same as the cotton business, is the question of overproduction. And, now, how to regulate that is a question that is up to you people. If you produce more cotton than the world will take, more than there is a demand for, naturally you have got then a price that is below the cost of production. I will be glad to answer any question any of the Representatives wish to ask me and do every thing I can to assist you in your deliberations here. If anyone wants to ask me a question about my ideas, I am glad to give them to you.

Questions By Senator Pollard:

Q. In regard to overproduction, what is the daily production this year as compared with the daily production last year.

A. I haven't those figures, but I understand there is not much difference between the production this year and what it was last year. Or, at least, they couldn't produce perhaps more this year than last year, on account of the greater numbers of wells being drilled—greater number of wells being held back. I don't think anyone knows what the real production is, because the wells have not been left open. In a great many places they are pinched down, and I think it would be impossible for anyone to say what the actual production would be providing the wells are left open.

Q. What I mean is, the actual production based upon the oil sold daily this year as compared with last year?

A. My information is they are drawing on storage. I don't know just what that extent is, though as a matter of fact there is more oil in storage than is profitable to be kept in storage.

Q. Is the over production you refer to based upon imports, or production from the United States?

A. Production from the United States, of course. As to the question of imports, there is a great deal more oil exported than is imported.

Q. Governor, I haven't seen the reports of imports for last week but it is my information,—a man told me that he had them and would get them to me,—that the imports in the United States last week totaled one million eight hundred thousand barrels. That is a good deal more than the average weekly imports?

A. I don't know. I haven't studied those figures and I am not in position to tell you. So far as I am concerned I would rather not see a barrel of oil imported into this country as long as this country is furnishing the necessary production.

Q. The main purpose, as I understand it, of this session, is to pass some bill that will seek to enhance the price of crude oil. Isn't that the chief problem.

A. I will answer this way, that if

oil was a dollar or a dollar and a half a barrel I do not believe you gentlemen would be here today. If anything is selling for a fair price everybody seems to be satisfied and they don't want any legislation. It is a time when they do not know what to do and everybody going broke, or thinking they are going broke, that they call for the State to help them out.

Q. Why is it, I don't want you to think I am trying to do anything but get information, you know the oil business and I don't. The thing we people are interested in in East Texas, of course, we want to see the price of oil go up, but we can't understand why it is now that crude oil in East Texas, in Rusk, Smith, Gregg and Upshur Counties, why the price is ten cents a barrel and in the Van area, just across the Smith County line about a half a mile, the price is thirty-one cents. What makes that? It that over production that makes the difference in the price in the two fields, with the same companies buying it and running it through the same pipe line, what makes the difference in price?

A. I think it is too many people selling oil. There are only one or two producers in the Van Field and they are not pushing their's on the market. In the East Texas field you have hundreds of people, I say hundreds, it may be more than that, I mean that may be more than is really selling oil, but you have everybody clamoring for a market, what little market there is, and of course this fellow lowers his price, and the next fellow lowers his price, and it is a question of who can sell the lowest, or who can offer their oil at the lowest price.

Q. Should we enact legislation that will equalize the price all over the state, is that your idea?

A. I don't know whether you could enact such legislation. I think by enacting a law along conservation lines, and when conservation would be carried out to the letter, you perhaps would regulate the production to where you would not have these conditions existing.

Q. I have been informed by those in position to know, whether they did, or not, that two weeks ago we had about eleven hundred producing wells in the East Texas area, and out of that number there were one hundred and eighty wells producing, producing wells, some with an estimated production of forty thousand barrels that were not connected to any pipe line, and that they could not get any pipe line to connect them up and run their oil. In some cases major oil producing companies are alleged, in fact I think it is true, that they have two or three off-set wells and they are running several thousand barrels a day out of the three wells and refusing to take anything from the off-set wells, even though they were connected with them prior to a month ago. Under our rateable taking law I believe we could enforce that and make them take it, couldn't we?

A. I don't know about that. I think under a proper law and a proper commission to carry out that law and enforce it, that you would not have that condition existing.

Q. Don't you think we ought to pass a law along that line, correcting that evil?

A. I am not familiar with those details in the field.

Q. If that condition exists it ought to be corrected.

A. Certainly; it ought not to exist. It ought to have some remedy, there ought to be some remedy for it as I have said. With a proper conservation law and rateable taking law you would not have that condition.

Q. Governor, one thing I am interested in knowing, we discussed with you yesterday afternoon, Senators Holbrook and Oneal and myself, the present price of crude oil as compared with the present retail price of gasoline and other by-products of crude oil. What is your idea for that difference at this time?

A. I don't quite get your question.

Q. Just simply this: As I stated to you yesterday, I stopped over in Freestone County and filled up my tank with gasoline and my crank case with oil, and when I got thru it cost the price of fifty-five barrels of crude oil—

A. (Interrupting) I don't know anything about individual cases.

Senator Pollard: I mean the price of gasoline is still up considerably as compared with the price of crude oil?

Governor Sterling: I don't think that is quite true, Senator, because

I have bought gasoline as late as last Saturday at, I think, 12 or 13 cents a gallon. Almost all the stations have a price posted of 13 cents a gallon; so if you will take gasoline at 13 cents a gallon, and take the 4 cents tax from that, that will leave you 9 cents, and take 2.60c freight per gallon, or 2½c we will say, that will leave you 6½ cents. Then you take 3 cents for the dealer who is selling it, and you have 3½ cents; and you take 2 cents for the wholesaler, and you have got 1½ cents for gasoline for the manufacturer. According to those figures, I don't believe he would make any money. Now, as to your question about lubricating oil, there is apparently an hiatus in there, because the filing station men do a great deal of work for you when you drive in, and they consider they are entitled to a profit on the lubricating oil, because they are disappointed when you do not buy any lubricating oil when you drive in. They consider that as a profit they are entitled to because of service. They are undoubtedly making a fairly nice profit on the lubricating oil.

Senator Pollard: We have been furnished fact and figures, I believe Senator Holbrook had those furnished by the Interstate Commerce Commission, showing that the only branch of the oil industry that makes any profit is the pipe line branch; is that true?

Governor Sterling: I don't think so; because all are not in the pipe line business.

Senator Pollard: Not all are making money, are they?

Governor Sterling: Not now; I don't think any are making any money now; at least not to my knowledge. Lots of them are in difficulty, and none are claiming they are making any money at the present time that I know of. I think, however, it is a fact that the pipe line companies make a better return on their investment than the producing companies make.

Senator Pollard: I will have that information in a minute.

Governor Sterling: Of course, at times the producers make a great deal of money; at other times they lose money.

Senator Pollard: I want to get those figures.

The Chairman: Are you through with your questioning?

Senator Pollard: No, sir; I want to find that information. I will have it in a minute.

The Chairman: I am going to insist that the members of the Senate get the recognition of the Chair before interrupting. If we don't do that, we are going to get into confusion, and have questions back and forth across the Chamber.

Senator Pollard: I have that now, Governor, in order that you may understand my question, this information is compiled from the Interstate Commerce Commission Report, Statement No. 3170, for the year 1930, and is copied from the Oil & Gas Journal, showing that the Humble Pipe Line Company in transporting 122,789,186 barrels of crude oil, reported a net income of $18,081,605, and declaring a dividend of 40 per cent for the year 1930. The Magnolia Pipe Line Company on transporting 97,734,137 barrels of crude oil reported a net income of $10,536,479, and declared a net dividend of 46 per cent. The Gulf Production Company on transporting 77,016,459 barrels declared a net income of $10,346,992, and declared a 1930 dividend of 338 per cent. The Gulf Pipe Line Company of Oklahoma transporting 30,224,892 barrels reported a net income of $3,435,396, declaring a dividend for 1930 of 400 per cent. The Texas Pipe Line Company transporting 42,689,125 barrels reported a net income of $9,626,402, declaring a dividend of 93.4 per cent. The Texas Pipe Line Company of Oklahoma in transporting 15,294,741 barrels had a net income of $1,099,061, and declared a dividend of 100 per cent. They cleared a net dividend, the Humble Pipe Line of 11 cents a barrel, the Magnolia Pipe Line of 11 cents a barrel; the Gulf Pipe Line of 13 cents a barrel; the Gulf Pipe Line Company of Oklahoma of 11 cents a barrel; the Texas Pipe Line made 22 cents a barrel, the Texas Pipe Line Company of Oklahoma 7 cents a barrel; or an average profit of 12 cents a barrel on every barrel of oil transported. Taking into consideration the fact that independent operators do not own pipe lines, and further taking into consideration the fact that all major companies seem to be making a profit only on the pipe line division, and

losing on the producing, refining, and distributing, don't you think it creates a monopoly that drives the independent out of the producing, refining, and marketing of crude oil and its products.

Governor Sterling: I think the consolidated return is what you have to take into consideration.

Senator Pollard: I have given that to you.

Governor Sterling: No; you have given just one branch of the company. Those pipe lines are owned by the parent company, and this dividend goes to the parent company. Of course, I don't know—I am not a stockholder—I don't know what those profits have been; I have not enjoyed any of those dividends in some time; but I think that it goes without saying that in some instances the pipe line rate perhaps should be reduced; I don't know. I do know that it costs lots of money to build pipe lines. Sometimes they spend millions of dollars for a pipe line and it is idle in a short while; and I couldn't say whether they are making a fair return without seeing their consolidated report. I couldn't answer that question.

Senator Pollard: Do you think the pipe lines should make the profit for the producing, refining, and distributing part of the major company, and permit it to lose money on the other three branches, which are competitive with independent production?

Governor Sterling: Well, sometimes you make money on the apples, but lose it on the bananas.

Senator Pollard: As a matter of public policy, don't you think the pipe lines should be regulated so that they would not stifle competition as to the producing, refining, and distribution of gasoline and its by-products?

Governor Sterling: I think any company's profits should be regulated. I think they should have a fair return, but that the people should be insured that they will not be over-charged on rates—whether railroad, pipe line rates, or any other common carrier rates.

The Chairman: Is the Senator through?

Senator Pollard: Yes, sir.

Mr. Cousins: I have some questions that I would like to ask the Governor.

The Chairman: All right, Mr. Cousins.

Questions by Mr. Cousins.

Q. Governor, every time we begin talking about oil or oil legislation, there is a great deal said about imports. I happen to have in my district some refiners. Is it practical, Governor, if a refiner is not under contract to take foreign oil, is it practical for them to go to a foreign field and get oil now, when they can get oil from the East Texas oil field as cheap as twenty-five cents a barrel?

A. I think it would be very poor business for them to import oil when they have such an abundance of oil here at a starvation price.

Q. Do you think, knowing the refining business as you do—you know it far better than I do—would a refiner operating in the Gulf Coast District—Houston or Beaumont—would he show any business judgment at all in importing foreign oil when he could get good oil run down hill from the East Texas field to Beaumont or Houston?

A. I think it would be very poor business to pay more for a product abroad that you could get at home at a great deal lower price.

Q. These imports, unless they are coming in under contract and they have to take the oil, these imports are going to some other part than the Gulf Coast District?

A. I would think so.

Q. In the price fixing of crude oil, isn't it a fact that the hold-over—the amount that the East Texas field could produce, rather than the amount it is producing, isn't that having a lot to do with the price of oil?

A. I think the potential production, and the fact that there is an immense productive area, which is, I understand, greater than all the other fields combined in this State, has a great bearing on the price of oil, because it shows that there is an abundance of it that can be produced by very little effort.

Q. Like the hold-over in the cotton market—knowing that we have eight or ten million bales hold-over it affects the cotton not yet produced?

A. It has a very material effect on the price, like a lot of oil in storage has on oil.

Q. Governor, there has been a lot said about the price of gasoline and lubricating oil. I am trying to get the facts. It is a fact that when they have refined oil that has cost more than the present oil has cost them and the labor has cost them more than the present labor has cost them, they are a great deal like the merchant, who at the peak of high prices had put his money in dry-goods and other wares and is still trying to get his margin out of it?

A. I don't think that is true at this time, because I believe the price is, from my knowledge of the refining business, where they are making no money out of the refining of gasoline, even if the oil was given them. I don't think they are holding any price of gasoline up to make any money out of the cheap oil today; I don't see where they are making it.

Q. Well, how about lubricating oil?

A. Lubricating oil is retailing at a price that certainly gives the retailer a profit. I don't know what the wholesale price is to the filling station man; I am not in touch with that; I don't know what he pays for his lubricating oil; but I do know what he sells it at, because I have bought it.

Q. That is something of an advertising proposition. We don't look for a special brand of gasoline like we do lubricating oil.

A. I think they are getting to that now. They seem to have names for their gasoline. I don't know whether one is much better than the other or not; they all make your car go pretty fast.

Questions by Senator Hopkins.

Q. Now, Governor, I understand this committee is sitting primarily for the purpose of obtaining information pertaining to proposed legislation. Now, you have been quoted in the papers as favoring a separate commission. Would you mind stating just why you prefer a separate commission rather than the existing commission?

A. Well, in the first place, I feel that the regulation of the oil industry has no place in the Railroad Commission we now have, in the first place, because there is not much in common between the oil industry and the railroads. On the other hand, the industry has grown to such an extent, and there is so much to do, and the Railroad Commission has been burdened with the regulation of trucks and buses to where I believe it is necessary to give the oil industry and other conservation measures a separate commission in order to give them proper attention.

Q. As I understand you, Governor, it is your theory that a commission is necessary, not only to take care of oil and gas, but of other natural resources?

A. All natural resources.

Q. Would it be your theory now that this commission would be authorized to go far enough to conserve the soil?

A. Yes, sir; I think that is one of the most important natural resources of Texas, and the waters of Texas, overground and underground, if you please.

Q. This thing worries me, Governor. If we adopt the precedent of creating a separate commission and give it powers to conserve oil and gas and natural resources, with particular powers to enforce its orders, are we not drifting pretty far afield, and will have to give them the same particular powers and authority to enforce cotton acreage control, say, that has been suggested in this and other legislatures?

A. I see no reason why they should not control the acreage of cotton, as much as they should control the production of oil or any other commodity, if it takes control to give them a fair return.

Q. It would be your theory that this commission would eventually have power to control the planting of cotton and other products?

A. No; I don't believe that would be the purpose of it—to control the planting of cotton. I think it should control the conservation of the soil. Now, I don't know—I feel that it would be likely reaching out too far and placing too much . . .

Q. The thing I have in mind is, are we not by creating a separate commission for oil and gas, laying a predicate—a dangerous predicate, perhaps—whereby, under the same token in the future, we would be obliged to give to another commission particular powers as to the conservation of the soil and various other products?

A. I think there is a difference

between conservation and crop regulation.

Q. As I understand you, at this time, you would not be in favor of granting to this commission, if created, the authority to regulate agricultural crops, by virtue of the commission's order, as it would oil and gas?

A. Senator, my idea is that we should have a commission that would control or regulate and conserve the natural resources of the State; the soils, waters, minerals, and all natural resources of the State.

Q. Now, Governor, I have this further question: You have been reported as being opposed to the portion of the bill which has been suggested by some schools of thought of giving to this newly created commission the power to say what is market demand and, predicated upon that, control production. Do you subscribe to the theory that this commission, if created, should have that power of saying what is market demand?

A. I have gone on record as opposing that particular feature of some bills that have been offered.

Q. I agree with you, but would like to ask you why.

A. Well, simply because it might give to the commission authority that they really ought not to have. It is not a question of price; it is a question of conservation of the natural resources. And I will say again—I will repeat what I said a while ago, that proper conservation and practices and the proper developing or the proper regulation of oil and gas will likely accomplish the purpose that so many want, and that is a better price for the product.

Q. Wouldn't it be tantamount—giving that commission that power of saying what is market demand, wouldn't it be tantamount to fixing a price?

A. That is the thing I was opposed to; anything that would border on price fixing I am constitutionally opposed to.

Q. You would not subscribe to the theory of giving any State commission the power, either directly or indirectly, to fix prices on any natural product?

A. I certainly would not.

Q. Governor, I have this further question, which has been frequently propounded to me by ordinary laymen on the street—and I am saying it as a layman; it has been frequently asked me in this wise: It is said and reported that certain major companies in the State for a number of years have produced only approximately half or fifty per cent of the oil that they refine in their refineries—in other words, that the oil refined, about fifty per cent, is purchased on the open market. The question comes that in 1928 and 1929 oil at a dollar and a dollar and a half a barrel was being purchased by those companies and they were prosperous and enjoying a period of prosperity and declaring dividends when they were purchasing fifty per cent of their oil at a dollar and a dollar and a half per barrel. Now, a layman asks the question, how could they be properous under those conditions and not be prosperous when purchasing the same fifty per cent at ten cents a barrel. What would be your theory on that?

A. Well, it is not a question of a theory; it is a fact. They are selling their product where there is no profit in it. You can take an explanation as to the price in the actual fact as to gasoline, and it shows that they would not make a profit even if the oil were given to them under present conditions.

Q. Well, the ordinary layman, and I am one, can not understand why there can be prosperity in an industry that purchased fifty per cent of the oil at a dollar and a half and yet they can buy it at ten cents a barrel and can not show a profit.

A. That is very simple. It is a question of mathematics. Gasoline today is twelve or thirteen cents, and when they were paying a dollar and a half gasoline was twenty or twenty-two cents. Now, there is a certain fixed cost; you have your tax of four cents; you have your transportation cost, and when you get down to where there is nothing left after the cost is taken out you have no profit.

Q. All right. Now, going back just a second to the creation of a new Commission. Do you think the Railroad Commission is unable to handle the administration of natural resources due to the fact that it has already sufficient duties in the administration of railroads and pipe lines?

A. Not meaning to reflect upon the personnel of the Railroad Commission, everybody in the House knows that it has not been done.

Q. Well, I didn't hear the testimony in the House.

A. I mean in this room—not in the House of Representatives.

Q. I understand that some of the members of the Railroad Commission are of the opinion that if sufficient authority is granted to them by legislative enactment to enforce their orders they could and would administer the oil and gas laws and proration schemes; but you differ from that on the ground that you do not believe they have time to handle it?

A. I believe their time is taken up with other things; if they give it proper attention they would not be able to do justice to the proposition they are trying to handle.

Q. Governor, would you be of the opinion that existing Bureau and Commissions should be combined in the newly created Commission?

A. Yes, I think the Reclamation Engineer could be placed under this Conservation Commission, and the Water Board could be placed under this Conservation Commission. I believe you would have one less Bureau that you have now.

Q. When it comes to combining departments on the ground that they administer the natural resources, could we not go further and put the Department of Agriculture and the Game, Fish and Oyster Commission under the same Commission?

A. Well, I don't know about the game, fish and oysters, whether they could be called natural resources. They grow fish and grow oysters, but they disappear—I don't know whether they would be termed a real natural resource or not.

Q. But you would subscribe to the theory that the Board of Water Engineers and the Reclamation Engineer could be combined?

A. Because their duties could be combined with conservation.

Q. Now, we are going to have utility regulation in the next few years. Do you subscribe to the theory that it should be placed in this Commission?

A. Well, I don't think it has any place in this Commission.

Q. Well, would you advocate a separate Commission for that, to administer water and water power and the distribution?

A. Distribution is one thing and conservation of natural resources is another.

Q. Governor, don't you think when you administer that with oil conservation you would have some trouble mixing water and oil laws?

A. Well, you know some people try to mix water and other things.

Q. Well, don't you think there would be some difficulty?

A. I will say they sometimes try to put in queer mixtures, Senator.

Senator Hopkins:—I believe that is all.

Senator Woodruff: Mr. Chairman.

The Chairman: The Senator from Wise.

Questions by Senator Woodruff.

Q. Carrying out the idea with reference to the creation of a new Conservation Commission, do I understand from the press reports your views correctly with reference to the qualifications that should be required of the personnel of the new Conservation Commission—that is to say, one should be a lawyer versed in that branch of the law pertinent to the oil industry, one member should be a petroleum engineer, and the third member should be a practical oil man; is that your idea?

A. No, in forming a general Conservation Commission I think the qualifications should be left off, and I think this Commission should be composed of the very best men possible to secure. You can hire lawyers, and you can hire engineers and geologists.

Q. Now, Governor, conceding that we have created here such a general Conservation Commission and have reposed in the Governor of the State—and you happen to be the Governor at this time—the duty and responsibility of appointing the personnel of the Commission, what sort of qualifications would you as the Governor of the State seek out for the three members of that general Conservation Commission?

A. I would endeavor to get the best minds or the best men I could get or the best business men that could be gotten. As I said before, you can hire lawyers and hire engineers.

Q. When you say "business men" does that mean business men experienced in merchandise or oil business men or bankers?

A. Well, you might find a lawyer as a business man; lots of times lawyers are good business men.

Q. Yes, Sir. Then, Governor, comparing some of the features of conservation of oil and gas and similar minerals, that would be the big duty of such a Commission of this time, would it not?

A. I think it is the thing that is uppermost in the minds of the people at this time.

Q. At this time, based on the economic values of the State of Texas, the oil industry would be the most important phase of the conservation Commission's business and duties; it that true?

A. Well, I think it is very important to conserve all the natural resources, such as soils and all minerals.

Q. Are you prepared to tell the committee what the relative importance of the several phases of conservation of the natural resources would be in the hands of this Commission—would you say that oil was first or water first?

A. I think oil today is first.

Q. Well, oil conservation would be their first consideration at this time. You, as the Governor of the State, would be obliged to give more consideration, in appointing the personnel of the Commission, to business men, as the Governor says, experienced in the oil industry; is that true?

A. Why, they should be experienced in many industries, because the very nature of their duties would not be as to oil alone.

Q. Now, is it not possible for a man to be highly specialized in more than one or two lines?

A. Yes, but you can hire your specialists.

Q. Now, I want to go into the question of public policy, and we will take the Board of Water Engineers, engaged in the undertaking of the conservation of the water resources of the State. Does the Governor conceive that to be a highly technical matter?

A. Yes, sir.

Q. It is highly technical?

A. Yes, sir. You can hire your technical men. The members are very competent men.

Q. I take it that the Governor's idea might be that the general Conservation Commission should be composed of business men highly experienced with emphasis on oil and gas business?

A. Yes, sir.

Q. All right. Primarily a general Conservation Commission would be a policy making board, is that true?

A. Certainly it would.

Q. And it would be a policy making board all right. What particular public policy of the water resources conservation could be particularly determined by an oil and gas Conservation Commission, that is a commission made up of oil and gas men?

A. You would have your experts the same as you have your geologist in the oil business.

Q. You are talking about these bureaus, and their ability to eliminate expenses. That is a big item. When you consolidate the Board of Water Engineers with the Conservation Commission and put all of its powers and duties under the commission, your Conservation Commission is composed of oil men, now if they don't know anything about hydro-electric engineering how are they going to determine what is or what is not the sound public policy with reference to water power in Texas?

A. Well, they have their experts.

Q. You say the Commission should have one hydro-electric expert or more than one?

A. That would be to be determined, it might be that they would need more than one, I don't know.

Q. Now, in the Governor's opinion, with the information he now has with reference to the water problem and what are resources and the function of the water engineers at this time, with the information that the Governor now has with reference to those things is he prepared to tell the committee that one hydro-electric engineer would be sufficient to the need of the Conservation Commission?

A. I would not want to answer that question, it might be that you would have to have more than one.

Q. The Governor is not ready to tell this committee then that the commission could get along with

fewer than three hydro-electric engineers?

A. No, I am not in position to say that they could, more than likely they could.

Q. You could not step out in the open market and get three competent water engineers for the salary that the State now pays members of its board, could you?

A. I don't know about that, however if the State is not paying them a sufficient salary they should be paid a sufficient salary.

Q. Do you know a competent engineer, oil engineer, petroleum engineer, or civil engineer, that you could go out and hire for five thousand dollars a year, or four thousand dollars a year?

A. That or a lot of them working for that.

Q. Then let's go back to the thought we digressed from. Here is your general Conservation Commis sion, and it has under it the administration of the water law. It is going to have to employ technical experts to advise it as to what the policy ought to be with reference to water rights, it that true?

A. No, not the kind of policy, they would have to advise them as to the facts and the policy would be fixed by the commission.

Q. Then after all is said and done, Governor, when it gets to a question,—I am trying to arrive at in my own mind with your assistance an intelligent answer to this question, would you in fact reach any greater economy with reference to the administration of the water laws in the State under a general board that you now have with a separate board?

A. I am inclined to think you would.

Q. Where would those economies come in?

A. I just answered your qusetion that you might be able to get along with less than three, and you would have one less department to maintain.

Q. Has the Governor made any study of the functions and the duties as they now are, and as the functions and duties would be to effectually conserve our water resources, have you made any study of those things to find out just what the duties are in that particular and whether or not we have more men there than we ought to have or fewer men than we ought to have to properly function?

A. I have not made an audit of that situation.

Q. Then how does the Governor know and come in here and tell the committee at this time it is his opinion that we ought to abolish a water board and merge their duties into another board?

A. I have not made that statement but I think in time that it ought to be done and if you concentrate and have fewer departments you have less expense.

Q. Oh, I understand the Governor is not saying it ought to be done now but at some future time it should be done?

A. Yes, sir, I think eventually that ought to be done and I suggested that in my message to the Legislature.

Q. With reference to the conservation of the soil, at the present time, as I understand it, and I have very little information on that, on that subject, the biggest piece of work that is being done in the State at this time is conservation on soils, an undertaking which is being done by the Department of Extension at A. & M. College, the Department of Agriculture is attempting to do a little something along that line. Is it the thought of the Governor that that should be taken out of the hands of the Department of Agriculture and out of the hands of the Department of Extension at A. & M. and put in the Central Commission?

A. I think that would be better if it was done.

Q. Let's analyze that a little bit. What is there in common between the conservation of soils as suggested in the Cunningham bill, and as suggested in the public forums generally, and the conservation of oil and gas in Texas?

A. Both of them are natural resources.

Q. Let's go then from that to the Railroad Commission. As I understand one of the main faults the Governor has in mind with reference to taking the oil and gas business out from under the Railroad Commission is that the Railroad Commission has other duties to perform, is that true?

A. Yes, it has many other duties to perform.

Q. The Railroad Commission has charge of the railroad affairs, the regulation of the affairs of the railroad insofar as it is not limited by the Interstate Commerce Commission through, and it has the buses and trucks under its supervision, and control of the oil and gas expenses. It now is functioning in the capacity of three boards. Now then if the Railroad Commission cannot take this additional work of oil and gas conservation into its hands and properly handle and administer those laws how does the Governor argue to the committee that the Oil and Gas Conservation Commission could take over three or four of their bureaus?

A. We would have no such thing as an Oil and Gas Commission, it would be a general conservation commission of the natural resources of the State.

Q. If the Railroad Commission hasn't got time to handle the oil and gas business how would another board of three members have time to handle oil and gas and do the work of three other boards of three members each now in existence?

A. Where do you get the three other boards?

Q. You talk about the water engineers, reclamation engineers,—

A. That is all I mentioned.

Q. The Governor has said soil?

A. That is all right, that is a natural resource. You have no such soil engineer, you have no one dealing with that.

Q. Is it the Governor's thought that the present personnel of the Railroad Commission is not sufficiently versed and informed on oil and gas matters to properly administer any laws that the Legislature might give to them for administration?

A. I have never said that.

Q. I am asking the Governor if he now says that, if they are not the right of kind of business men that the Governor has in mind for the commission?

A. No, the present Railroad Commissioners are friends of mine and gentlemen, and I have nothing to say of that kind about them.

Q. We are forgetting friendships here, we are a board of directors in meeting,—

Senator Woodul: Now wait a minute; I want to make an objection to that.

Q. I don't want to lead the Governor into an embarrassing situation.

Senator Woodul: You are not going to do that, go right ahead.

Q. I am trying to get now to what the Governor thinks about the situation for the information of the Legislature.

Senator Woodul: Mr. Chairman, the Governor of this State in answer to a question by the Senator has stated that he has never said anything about the competency of the Railroad Commission, and I think that is as far as the question ought to go in that matter in the interest of the public service and what ought to be let go at that.

Q. I will withdraw that question.

Senator Martin: Mr. Chairman, I would like to make this statement. I think the gentleman ought not to interrupt the Governor while he is going on talking and answering the gentleman's questions. I think he ought to be permitted to make his answer full and complete before another question is propounded.

Q. What I would like to inquire about as to your views may seem a little far-fetched, and I hope the Governor and the committee will indulge me these few questions I am about to ask. On the question of the importation of crude oil into the country, does the Governor understand that the exports exceed the imports of oil at this time?

A. That is my information at this time. I don't know that it is true or not, but it did a short time back; we exported more than we imported.

Q. I don't mean at this very instant, but I mean this year, or that cycle?

A. Yes, I think that is true.

Q. Does the Governor subscribe or endorse the recommendation that has been made to Congress from certain industries, that a tariff on oil should be imposed by the national Congress?

A. Yes, sir.

Q. He thinks a national tariff ought to be imposed?

A. Yes, sir.

Q. To what extent should it be fixed?

A. That is a question. If you put a tariff on there now like some have suggested it would be more than the

oil is worth. I don't know what would be a fair term.

Q. You think the tariff should be sufficient to exclude or discourage the importation of crude oil?

A. Yes, sir, I think we have enough of our own.

Q. Now, as a national policy, of course Texas is not memorializing Congress on tariff on crude oil, and can't forget the fact that it is one of forty-eight states of the Union, and what affects the Union generally ought to affect and concern Texas in discouraging the importation of foreign crude in order to stimulate the domestic price of crude. That would tend, would it not, to exploit at a high price at this time the oil reserves of this country, would it not?

A. No, I don't think so.

Q. Well, it is to exclude from the domestic market all of the foreign oil, at whatever price it can be had; to that extent you enhance the market domestically; is that true?

A. I don't know whether you would say enhance the domestic market or not.

Q. The purpose of it admittedly is to afford a market for home oil?

A. Yes, sir, just like you would afford a market for cotton or beef.

Q. So we can go ahead and mine our oil at the utmost possible speed. Now I ask the Governor as a public policy, affecting this State and nation, whether or not it is sound public policy on the part of Texas to exclude Venezuelan oil and force that oil to remain in the ground in storage in Venezuela until such time as we should have so depleted our reserves domestically as to make it profitable to import their oil, is that a far-sighted public policy? We all understand that oil is one of the most important commodities in our national existence at this time, from the standpoint of national business and national defense and all of those things, oil is indispensable. Admittedly, there is also a limited amount of oil in Texas. Is it the Governor's idea that we should legislate so far as possible to exploit the Texas oil reserve as speedily and rapidly as possible, and give the present generation the fullest possible advantage of it and then go ourselves as quickly as possible on the mercy of the Venezuelan oil reserves as a state and as a nation?

A. The idea of a conservation commission to conserve natural resources would be opposite to your statement. I have heard,—

Q. What does the Governor think,—

Senator Martin: I insist that the Senator permit the Governor to answer his question before propounding another question.

Q. I beg your pardon.

A. (Continuing.) You are getting along pretty well, you might just keep going and I will listen. I started to say that I have heard of this question of the limited supply of oil in Texas before. A very eminent oil man some ten years ago said the supply would be exhausted in five years, and of course we see what we have now, but the very fact that I am suggesting a conservation commission to conserve natural resources, including oil and gas, shows my idea of conserving those natural resources for the generations to come.

Senator Woodruff: Mr. Chairman and gentlemen of the Committee, it is not my idea to impose upon the committee's time, nor the Governor's but there are several things that I have been anxious to talk to the Governor about because I hope to cooperate with him and he with me along the line of some of these matters touched upon here, and I thought if we could get the matter opened up that the committee would get some discussion that would be mutually helpful.

Q. Now, Governor, following up the answer that you just made that the purpose of conservation is to preserve to future generations some of the benefits, at least of the oil reserved in store in this State, and we have the Governor's view with reference to that matter. How does the Governor harmonize proration and the tariff?

A. I didn't quite understand, Senator? I want to conserve—I want to conserve and that means you should not waste. If we waste our natural resources unnecessarily of course we are doing something we ought not to do and causing trouble for the coming generations.

Q. Well, could a man advocate the utmost care and conservation of domestic reserves in oil and at the same time build a tariff wall around the State high enough to keep foreign oil out?

Senator Woodul: That is another matter that we have our own views about, and I don't think a difference of opinion—it is argument.

Senator Woodruff: I withdraw the question.

Senator Woodul: And it involves an issue that is not material here, and if we are going to keep up this way we will be here another week. I want to get at the witness myself.

Senator Martin: I think that it is material. We have been called upon to create a Commission which will be added to as the years go on and will be a natural drain upon the State hereafter, and if we can force Congress to some effort here, by petition or otherwise, to place a tariff upon oil, the importation of oil in this country, which act will take care of the situation in Texas to such an extent the people will receive proper prices for their oil, I think it is material.

Senator Woodul: The fact that Congress would give us a tariff would not justify us to go out and burn up all the oil.

Senator Martin: We haven't had any information of that being done.

Senator Woodul: The question of waste is what is involved in conservation.

Senator Woodruff: I think I can make the question pertinent. I will lay a predicate for it.

Q. Going back to the question of the price of gasoline. I understood the Governor to say a while ago that there was no profit in manufacturing and refining gasoline at the current price. I understood him to say also, and if this isn't true, correct me, that one of the purposes of this conservation program is to make it possible for those engaged in the business of mining and refining and selling gasoline to make a profit out of it. Is that true?

A. That is natural. Everybody wants to make a profit out of what he is doing.

Q. Is that the Governor's idea of what ought to be done at this time by the Legislature?

A. I have said repeatedly that I was opposed to any measure that would have a tendency towards price fixing.

Q. I understand that, I heard that. Let us take up your answer to the inquiry of the Senator from Gonzales a while ago, wherein the Governor answered him that one of the purposes of soil conservation was to make it possible for the farmer to make a return, a reasonable return, on their investments. Does the Governor say substantially that?

A. Well, that goes without saying, the same answer would be to that question because the farmer is certainly entitled to make something out of his efforts in his farming, and if his land is conserved and if his soil is preserved he can likely make a better living out of good land than out of poor land.

Q. Is it possible then to disassociate the question of conservation, as that term is used in this proceeding—conservation of soil, or of oil and gas, is it possible to disassociate conservation from price stimulation as one of the objectives to be accomplished?

A. I said in the beginning, in my statement to the Senate, that if the price was satisfactory and oil was selling for a dollar a barrel, you folks likely would not be here, or if cotton was selling at twenty cents a pound nobody would be kicking about the price of cotton.

Q. When the Governor advocates conservation, proration or otherwise, has he in mind not only preserving to future generation some of the benefits of the natural resources of the State, but he has in mind realizing for the present generation some of the profits. Is that true?

A. Certainly.

Q. Now, going back to the price of gasoline, do you own any stock in any oil company at this time?

A. Not to amount to anything. I have a little stock in a royalty company, but not in any of the major companies.

Q. May I ask you—if it is improper I will withdraw it instantly—What royalty company does the Governor own stock in?

A. A little concern, I think called the Royalty Company, with about twenty-five or thirty thousand dollars capital stock. Some of the boys in Houston a few years ago were buying a little royalty and I took a little stock with them.

Senator Woodul: Is my campaign manager one of them?

A. No. I think I have fifteen or twenty shares of stock with some concern that is not making any money in the oil business, and unfortunately have no stock in any of those that are making a profit.

Q. Does the Governor directly or indirectly own stock in any major stock company, including the Humble Oil & Refining Company, at this time?

A. No, sir, I do not.

There may be a few shares of the Humble Company held in trust for another party, I think seventy-five shares, that may appear in my name, or in my son's name, but that is all. I do not own any stock in any major oil company.

Q. Governor, in this distressing time of the oil industry when as you said a while ago you bought gasoline at twelve or thirteen cents the other day, and the price is generally quoted as thirteen cents, tax included, how do you explain that during the last—well, since the war period, from time to time in various communities in this State, the major oil companies have sold gasoline at ten, twelve, and fourteen cents, when they were buying crude oil at the peak price?

A. I don't know of them selling any as low as ten cents.

Q. Well, I tell the Governor that in Fort Worth almost constantly during the last ten years that gasoline prices there have ranged from ten, twelve to fourteen and fifteen cents, tax included—

Senator Williamson: (Interrupting) I don't think your question has any bearing on this proposition because those conditions are created by local fights among gasoline dealers and has nothing to do with the price of gasoline at the refinery.

Senator Woodruff: I will show it does have something to do with it.

Senator Williamson: I don't think you can.

Q. If it is impossible for the major companies to sell gasoline at this time at thirteen cents, how have they been doing it at various times when the price of crude oil was much greater than it is now?

A. I think there are isolated cases where they had a price fight on, or a price war, or something like that, among the dealers. I don't know.

Q. Governor, do you have any information about any of those price wars ever having occurred between the Magnolia and the Humble?

A. I think perhaps at Fort Worth at one time they were scrapping up there, I don't know. I have been out of the oil business for over six years.

Q. Now, Governor, assuming that it is a fact, and I think it would not be a violent assumption, assuming it is a fact that over the last ten years, when you found localities in Texas where gasoline was selling for four to eight cents a gallon less than in other communities and localities in Texas, it was because of competition between the independents and the majors?

A. Well, I don't know about that. I suppose competition has something to do with it, but I don't know there was ever eight cents difference in the price of gasoline in any section of Texas.

Q. I say to the Governor I have filled my tank at twenty-one cents a gallon at Austin and driven to Fort Worth the same day and filled it for fourteen cents, in the last ten years. That is a local fight, Governor. If the little man who is selling in just a few localities can sell gasoline when the price of crude oil is a dollar, or better, for thirteen, fourteen and fifteen cents, why is it the major companies can not now sell it at thirteen cents when the price of crude is ten cents?

A. I think all you have got to do is to get the actual cost of crude oil and the refining and you can figure it out for yourself.

Q. Now, Governor, in that connection, and getting away for a little, two years ago 85% of the retailing of gasoline and petroleum products in Texas was in the hands of independent dealers. Today, on competent authority I am advised that 90% of the retaining of petroleum products in Texas is in the hands of the major company. Does the Governor, as a matter of public policy, think that that is sound?

A. As a matter of public policy I think it is unsound for the marketing of gasoline to have so many people in the business. Undoubtedly they have three to four stations over the State of Texas to where they ought to have but one. I think perhaps that has something to do with the costs. I think it would be a great deal better if they had fewer stations. It would be less cost to less people to maintain a profit out of it.

Q. Then is the Governor prepared at this time to say whether

or not he would advocate the divorcement of the retail business in the oil industry from the producing and refining end of it, as public policy?

A. No, sir, I would not. I think it would be impractical to do that. I think the public would pay more for their gasoline, more than likely, if it was not marketed on the lowest possible cost.

Q. Then, Governor, if you say there are too many retailers engaged in the business, are there too many refiners engaged in the business?

A. Well, I think perhaps there are too many producers and too many retailers and too many refiners to make it profitable.

Q. Do you think it would be more economical and to the best interest of all of the people of the State if we had one major company producing, refining and distributing petroleum products?

A. Well, I think that is going a little far.

Q. That is an absurb limit, yes, but approaching that as an ideal, would that be the end to be sought?

A. Not any more than if you had one farmer that farmed all the soil in Texas, and running the whole cheese.

Q. Then your answer indicates, Governor, I am not asking it over, that you would distribute the business in so far as is practical?

A. I think I have answered that question.

Q. All right, Governor, do you conceive it to be possible in connection with the legislative program now being undertaken to so protect the independent producers and refiners as to keep them in the business?

A. Well, I think if it is possible for the Legislature to do that we ought to do it, because I don't think anybody should be legislated or run out of business by unfair competition.

Q. Then, the Governor says anything the Legislature can do to build a fence around the independent producer or operator should be done?

A. I didn't pick out independents from anybody else. I don't know what you mean by independents, because most of them I think are very dependent now; in place of being independent, I think they are dependent.

Q. I think we might assume the Magnolia, the Humble Oil & Refining Company, the Gulf, and the Texas are so-called major companies, and not independent operators, refiners, or producers; that is what we generally mean by the majors.

A. Well, what do you mean by independent?

Q. I mean the little man out there operating on his own initiative, on his own individual capital, independent of any combine or group.

A. You think the little man is independent, and the big man is dependent?

Q. I don't want to quibble over terms, Governor.

A. I was trying to arrive at what you mean, Senator.

Q. I use the term "Independent" as the term is used in common everyday language about the oil business, that he is independent in so far as his business is concerned, of any corporate or partnership alliances or obligations.

A. Well, most of them are corporate, aren't they?

Q. Well, most of them may be.

A. However, he may not be independent of his banker.

Q. Then, the Governor does not draw any line between independents and majors. Governor, do you know anything about the so-called trust or combine between the major companies for the purpose of controlling the market price of crude oil and of gasoline?

A. I certainly do not. If there was any such combine, I think it would be my duty to try to break it up.

Q. In your experience in the oil business as a practical man, did you ever, for the purpose of controlling the market price of what you had to sell, or of what you had to buy, have any working agreement, expressed or implied, with another operator independent of you?

A. Most certainly not.

Q. Well, Governor, I don't know much about it, but I will ask you to tell this committee and the people of Texas what you think is the explanation for the fact that when one company posts a 10 or 20 cent reduction per barrel in the price of crude oil, all the major companies

follow suit on practically the same day?

A. Naturally, they don't want to pay any more for their oil than they have to; that is the business end of it.

Q. In the retailing end of it, the Magnolia will post a two cent reduction in the price of Gasoline, and the Gulf and all the other major retailers in Austin simultaneously will post a similar reduction?

A. That is simply because they would sell no gasoline unless they did.

Q. How do you explain the fact that it will happen, say at seven o'clock in the morning at all of them?

A. I don't think that is the case; they have to first find out what the other fellow is doing; then they post their price. I don't think they know what the other fellow's price is until it is posted; but when it is posted, naturally he has to meet that price, or he will not sell any gasoline.

Q. I appreciate your courtesy and I don't intend to tire you, Governor.

A. Don't worry; I think I can last as long as you can.

The Chairman: I believe Senator Beck had something to put in the record at this time.

Questions by Senator Beck.

Q. As Governor of this State, you have a great deal to do, or in other words, you are greatly interested in the finance of this State, including revenues, aren't you?

A. Yes, sir.

Q. I have in my hand a report filed by the State Auditor, which shows that for the year ending August 31, 1930, this State received as royalty from oil—that is gross receipts tax—$5,041,559.12. That portion which has been collected and estimated to be collected to August 31, 1931, will be $3,284,785.81. Now, for the year 1932, based on the orders issued by the Railroad Commission, and a price of 44 cents per barrel, the income is estimated to be $1,808,073; but with a price of 10 cents, the income for the State will be proportionately reduced to where it will be only half a million. Having those facts before you, don't you think it is necessary to do something to conserve the natural resources of this State, in order to save the State's revenue?

A. It is certainly obvious that something should be done to increase the revenue, and of course an increase in the price of petroleum would increase the revenue.

Senator Beck: I want to get that in the record.

Senator Holbrook: Did I understand that the Railroad Commission made estimates as to what the price would be next year?

Senator Beck: No. I said, orders issued by the Railroad Commission as to proration of oil, and so forth.

The Chairman: Gentlemen, it is now twelve o'clock.

Senator Holbrook: I move that we recess until two o'clock.

(Motion to recess until two o'clock, p. m., was thereupon put and carried; and the hearing was recessed until two o'clock, p. m., Wednesday, July 22, 1931.)

(Afternoon Session—2 p. m.)

The Chairman: Gentlemen of the committee, I have been advised that the Governor is in conference and it will be some twenty minutes before he can get here. What is the pleasure of the committee?

Senator Pollard: Mr. Chairman, Mr. Richmond is here; he is umpire in the East Texas field. He has been testifying in the House, and he is here for examination if you want him next.

The Chairman: They said it would be about twenty minutes before the Governor can be here.

Senator Holbrook: I move that we stand at ease until 2:30.

The Chairman: If there is no objection, the committee will stand at ease until 2:30.

(Afternoon Session—2:40 p. m.)

The Chairman: Come to order.

Senator Pollard: Are we going to wait for the Governor, or proceed.

The Chairman: We will proceed.

E. V. Foran was sworn by the Chairman.

The Chairman: This is Mr. Foran, who had been summoned or subpoenaed or invited to come before the committee and give some evidence. The committee advised me this afternoon that they could not reach him until in the morning. Governor Sterling was in conference, and he could not get away for some time,

and to expedite matters we want Mr. Foran to give us some information he has, and we will get the Governor later. I will ask Senator Woodward to take charge of Mr. Foran at this time.

Questions by Senator Woodward.

Q. Mr. Foran, state your initials, please.

A. E. V. Foran—F-o-r-a-n.

Q. Where is your home, Mr. Foran?

A. In Fort Worth.

Q. How long have you lived in Fort Worth?

A. Just very shortly, the last 30 days, is all. My former residence was Wichita Falls.

Q. What is your profession, Mr. Foran?

A. Petroleum engineer.

Q. How long have you been engaged in that profession?

A. For nine years, 1922 to 1931.

Q. What technical education have you had in fitting yourself for that profession?

A. I graduated at the University of Idaho in 1921—June, 1921—in Mining Geology. I went on until June, 1922, at which time I went to the oil fields in Wyoming and worked there for two and a half years for the Mid-West Refining Company on conservation of subsurface gas and its relationship to the recovery of oil. That constituted a year's work on tube tests, running tubing in wells and application of top and bottom hole chokes, measurement of gas, and reaction of wells to all physical tests to which we could subject them. Following that, I was Assistant Engineer for the United States Government in the Petroleum Division of the Bureau of Mines, also on conservation work. The Bureau of Mines' duty was to observe and carry out the Government's conservation policy on the public domain. I left there in 1926 and came to Texas. Since then I have been in the Panhandle, North Texas, West Texas, Central Texas and East Texas on production engineering work.

Q. Mr. Foran, are you in a position at this time and are you in possession of any maps or documents that would enable you to explain to this committee and give us the benefit of what takes place in the development or in the exploration for oil, what takes place in respect to that matter?

A. Yes, sir, I have.

Senator Cousins: Mr. Chairman.

The Chairman: Senator Cousins.

Senator Cousins: We would like to have a little bit of order. People are walknig around the chamber, and I want to hear what the witness has to say.

The Chairman: I want to make this further announcement: If it becomes necessary we will call the Sergeants to maintain order and as nearly perfect quiet as possible in order that the Senators, and spectators, as far as that is necessary, in the rear of the house can understand what is being said. I sincerely hope that the spectators will be as quiet as possible. I don't want to have to call any sergeant to make you be quiet, but if it becomes necessary I will do so. We are not here to put on, as I said this morning, any side show and we are not trying to make any monkey business, but we are here at the expense of the people of Texas, trying to solve the problems of the entire State. The private citizen, whatever his position now is or may have been in the past, must keep order or leave. We must have just as little conversation as possible between spectators and others. And may I say this kindly, that if there is anyone who wants to see a Senator, if you will send a page to him you can go to the rear of the hall and hold the conversation.

Q. Now, Mr. Foran, we who constitute this committee, have no technical knowledge of these matters and very little general knowledge, so will you in your own way undertake to enlighten us in respect to the matters in which you think we are interested?

Senator Pollard: Senator, would you mind having him state for whom he is working at this time, so we will know?

Q. Mr. Foran, are you in the employ of any person or firm or corporation at this time?

A. For the Central Proration Committee of Texas; that is an advisory committee whose duty it is to keep informed on production matters and field conditions, with special reference to conservation. I therefore make it my duty to visit all fields wherein conservation is being

developed or is being practiced and to inform myself at first hand through my former experience as to what is going on at the present time. As a member of that committee, I hold purely an advisory capacity; I have no power except to suggest and recommend.

Q. All right. Now, Mr. Foran, will you—

Senator Pollard: Senator, there are two more questions, I think. Who pays your salary?

A. The Central Proration Committee.

Senator Pollard: Who furnishes them the money?

A. A group of large and small operators alike. I did not inquire into who the principal ones are, but I understand it runs into dozens and dozens of companies and of viewpoints.

Senator Pollard: Do you also not work for the Continental Oil Company?

A. No, sir.

Senator Pollard: You did, did you not, prior to this?

A. Some few years ago, yes, sir.

Senator Pollard: Who have you been working for the last two or three years?

A. For the Fain-McGaha Company in Wichita Falls, who were small producers in North Texas and East Texas.

Q. Now, Mr. Foran, will you in your own way explain to us or tell us what you think we should know in respect to this?

A. I have here on the main board seven or eight exhibits illustrating the conditions which are observed in all pools in Texas in one form or another. The details of the conditions under which they are observed or the conditions under which they exist may vary slightly, but the principles under which the matters here discussed are observed are common to all pools of Texas—that is, gas being a source of energy, water being a source of energy, and the manner in which production is secured from different pools in Texas—I make no reference to any particular pool, and do not represent any particular viewpoint at this time. Therefore, if you hear anything with respect to Yates, Van, Winkler, East Texas or others, it is merely informative, it is no more than a matter of information. Therefore, you may hear a little more reference to the East Texas pool than the others; that is because I have made a study of it during the last year and am more familiar with the conditions there than in the other pools. Exhibit "A" represents an underground section as in the East Texas field, the right hand side being to the east and the left hand side being to the west. You will notice that there are four wells, or representations of wells, which are drilled to a pay horizon. Now, in the East Texas field conditions are somewhat as follows: Below the pay sand or Woodbine sand is found a Georgetown lime; it is merely a limestone base that may be of considerable thickness, and the Woodbine sand in the East Texas lies on top of the Georgetown lime. Then on top of the Woodbine sand represented by both black and blue is what is known as the Austin chalk, a higher bed of lime which overlies that particular sand. Now, the Georgetown lime and the Austin chalk themselves are very tight and porous bodies just like fine grained sand and cement; in other words, fluids such as water, gas or oil don't readily penetrate these limes. Therefore, if any flood is trapped between those, even though a high pressure be exerted on it, nevertheless that fluid does not penetrate those limes. Therefore, the sand body represented by the blue and black represents a body of sand varying in thickness from a few feet to possibly a hundred to a hundred and fifty or two hundred feet out to the extreme west edge, and oil that originally accumulated in those sand pores is retained by the sand just as a glass of water would be, like if you pour it into a bucket, if you had a bucketful of sand and poured water into it, you would not see free water; it would occupy the space between the pores or two grains of sand; that is the same manner in the oil and gas underground, it occupies the space between the grains of sand. Since lime has no space between it, it can not carry water, oil or gas unless it is what we call porous sand, as the case may be in West Texas. Therefore the oil and the gas and the water that have been accumulated in that woodbine sand have been crowded gradually to the eastward by reason of the sand rising nearly to the surface in the vicinity of Waco and Fort Worth, where

waters through the ground may enter that body and seep down. The enormous weight of the three thousand feet of water overhead here exerts a pressure just as a water tank above your house would give you pressure above your kitchen if you put your tank three thousand feet up in the air. The source or head of this water is some three thousand feet above the point where we find it here. It trickles slowly. This pressure is consequently tending to come up and equalizes the pressure. Unless this sand pinches out here, it is trapped and held under very high pressure. The drilling of any wells which penetrate that sand or open it up offers relief for this water, gas and so forth by which it may find its way to the surface again. In this particular case the contact between the oil and the water, you will notice, is approximately level; in fact, it is parallel to sea level, just like any lake or pond has its surface parallel to the sea. Oil, being lighter than water, naturally is bound to rise over a long period of time; the oil will come to the top. Then the oil is found in the higher portion of the sand by reason of it being lighter than water and the compact plane between the oil and water, as stated, is level, therefore as the compact plane presses eastward at some point it strikes the base of the sand, because the sand is inclined upward. The point as it strikes the base of the sand is the limit where you will find water. If you go far enough west you will strike the water at a point below the oil water contact plane, and obviously you will find nothing but water.

Senator Poage: Before you take that exhibit now did you intend for those beds to dip to the west, they dip to the west do they not?

A. They dip to the west, they rise to the east. The east portion of the field is a higher portion, the portion which contains the oil is the higher portion of that plan.

Now this is a map of the East Texas field drawn acutely to scale, two thousand feet represent one inch on the map and you will notice the scale based five miles, each one of the little subdivisions is a mile. This serves to illustrate something of the size of that field. The area inclosed by the black dotted line is the producing or production area of the field, as indicated by twelve hundred wells which have been drilled and are producing oil. They comprise some one hundred and twenty thousand acres. On the west edge of the field an area is marked in light red, that is the area which is underlain with bottom water. In other words, if you drill wells in at any point vertically over that those wells, if drilled deep enough before they pass through the Woodbine sand they will not encounter water in the lower part of it. Any well drilled to the east of that will encounter the lime that I illustrated before they hit the water, because the water level or bottom water does not extend east of that particular point. Now in each of the East Texas field it is different than nearly any other field in the State in that the water which is forcing it's way gradually upward as oil is withdrawn from any portion of the pool. This water only occurs on one side of the pool. Nearly all other pools have water on all sides, completely surrounding it with water That fact makes the East Texas field somewhat physically different from any of the other fields, and subject to certain hazards that are not encountered in other fields. Before going any further with the East Texas Field, we will turn to a field that is representative of nearly every other producing sand in Texas, one which we might call the normal or ideal or well known field.

This is a map of the average pool in Texas, somewhat the way it looks on an ordinary map. The arrows are drawn in the direction in which the water is crowding into the field, which tends to displace the oil and gas, and as oil and gas are withdrawn you will note in this case that the arrows are on all sides of it. The area in red represents the area covered by bottom water, the part of the field that has bottom water below production. In this field we have four wells, one, two, three and four. Well Number One is in an area that is underlain by bottom water. Well Number Two is in an area that is underlain by bottom water, but fairly close to the area which has no bottom under it. Well Number Three is in an area which does not contain any bottom water. Well Number Four is on the other side of the field, which is in an area which has bottom water below it. Now this picture down here is just the same as if you had

taken an knife and had cut the field into and then you would look at the formation and the manner in which the water and soil and gas occurred; if we should cut this apart that is the appearance it would have. Well Number Four is there, Number Three is here, Number Two is here and Number One is in this position. The water is in this position and the soil in the upper portion of the structure, closed in by these impervious beds. On the other side there is the water formation. You will notice that this well drilled in on that side of the field is just barely in that part of the field where the water line is, the bottom of this well. There is no water here at this well, neither is there in here. This well is just at the edge of the water on the other side of the field, just as it is shown here. This well is quite a way out in the water area, therefore has considerable water under it. So what you are looking at here is what is known as a cross section of that field. This water is under high pressure. These beds that are coming out here finally come up and find their way to the surface. The enormous weight of that water constantly pressing down will displace that oil and gas, if you take it out, so when these wells are drilled in and start flowing you will take a certain portion of oil and gas out and at the same time you take them out this force becomes active. It is under high pressure, and the sand is loose and allows fluid to pass through them. That pressure gets relief through this well. The water starts moving in this direction and this direction and this direction, which the arrows indicate. It stands to reason that if any amount of fluid is taken out of that particular pool that water comes in on all sides, and not one. Then if water does come in on two sides, and not one, it only has to come in half as fast on each side as it would if there were water on only one side. In other words, if you withdraw a hundred thousand barrels per day the water flows in on both sides to displace that oil. If we had water only on one side and we withdraw a hundred thousand barrels per day all the strain is on one side, the water would have to overcome this displacement on one side instead of two.

Senator Pollard: With reference to the East Texas Field, it is proven to be from eight to twelve miles in width?

A.—You mean at the minimum width, eight miles and twelve at the maximum?

Q. Yes.

A. No, sir, it is about half that.

Q. You are the first geologist that has told me that. I live over there and have practiced law all over that country. But be that as it may, if you are getting a hundred thousand barrels a day out of that well and the water is rushing in from the west, do you say that you get as much water from one direction even though some of those wells may be as much as four or eight miles away. and I know some of them are as much as eight miles apart, that the water will rush in twice as fast as in a smaller field?

A. Yes, sir.

Q. Do you mean to say in a large field like that you will get the same amount of water rushing in as you do in East Texas?

A. No, sir.

Q. You just said that?

A. No, sir, I said that is in this particular field. If it was on one side it would be the same situation as if it was four or eight miles away. The water would rush in just the same.

Senator Woodul: Mr. Chairman, I think this is in the nature of cross examination, I think we ought to let him get through.

Senator Pollard: This is a particular situation. We have a witness that is not being interrogated, talking and giving his views, if you don't ask him while he is on something that you want to know about or that you are interested in how are you going to get back to it? It is all right with me, I can jot those things down.

Mr. Foran: (continuing) I said if this sand water finally closes in, and as you continue to take out the same amount of fluid, the tendency would be to move twice as fast as if you had both sides opened up to water and not one. I want the word tendency to go into the record clearly, that is its tendency. It might not be exactly twice as fast, but that is its tendency. Now for in cases where fields have water only on one side we must take into consideration that either one of two things

will happen, either the water will move in twice as rapidly as if it was coming from two sides, or the reservoir pressure removed from the water will decline abnormally and result in a premature stopping of the well from flowing. That is what happened in the Joiner area. The fact that those wells are a long distance from water means that the water has not the ability to maintain the reservoir pressure from the west edge to the east edge, therefore the east edge wells may suffer no bad reservoir pressure decline, and their valuable life is not prematurely stopped. When there is no water pressure they are unfortunate to have a limited amount of gas, and if the water could not displace the oil the wells are going to suffer decline and if that occurred the wells must stop flowing. It may be unfortunate that there is no water on one side of the field, but a limited supply of gas cannot allow the wells to flow longer than they have. I was there in March and numbers of the wells had gone out before they were sixty days old. It is true that they are a long distance from water, but they have a limited gas reservoir pressure. The fact that they are a long distance from water is not necessarily beneficial to the well.

Before turning this back, are there any questions with respect to the conditions prevailing here? In other words, the oil and gas withdrawn from here, the water having a greater area around there has the ability to displace that oil and gas at a faster rate than if on one side only, therefore, reservoirs of this type have the ability to maintain a high pressure rate in the face of fairly moderate withdrawals of oil and gas. The best example of that is the Yates Pool. This pool could very easily represent Yates, except in that case the water came clear across here, the lime is porous, and in addition to edge water they have bottom water pushing up, and I might say that what is known as bottom pressure was taken at the Yates as far back as the fall of 1927, when it was a very young field, and the pressure then was a little more than 700 pounds per square inch, a completely closed in well, that is the reservoir pressure. The pressure out there in hundreds of those wells, is still considerably more than 600 pounds in spite of the fact that well over a hundred barrels of oil has been taken out of it. That is due to the fact that water is coming in on all sides with uniformity and in an orderly manner which enables that water to displace the oil and gas at approximately the same rate at which the oil and gas are withdrawn therefrom. There is little or no reservoir pressure decline and therefore less or fewer wells have failed to flow. The fields is still producing 70000 barrels a day which is a very moderate amount and it bids fair to produce several hundred million barrels more without resorting to pumping because they are utilizing energy to its best advantage. That is certainly a point to consider when your producing fields are under a water hazard. Any field that has a high pressure head of water against it is certainly under a water hazard. That water becomes constructive power when controlled and very destructive power when it is not controlled. So, the manner in which it is operated will determine the manner in which the results lead. Before going any further are there any questions with respect to this?

Senator Rawlings: Was proration practiced in the Yates Pool?

A. It was practiced before statewide proration was known. The reason proration became apparent at Yates was Winkler, which was a pool under similar conditions that did not have proration either voluntary or enforced and the gas and oil was taken out without respect to the water hazard and the results was premature intrusion, stopping the flowing of a good many wells and enormous losses of oil which entailed financial loss as well. Yates, on the other hand, was developed more slowly, and although there were twenty thousand acres in the Yates Field there are only four hundred wells, and the field has not been producing four years. I think that is a remarkable manner of conservatism, and they are being repaid for it. It costs them three or four cents a barrel to produce oil today, and although they have taken out more than a hundred million barrels, their ability to produce oil today is almost as good as the day the field came in. I think that is the results of early cooperation of the operators followed by proration which was adhered to.

Senator Woodward: What is the condition now in those two fields with respect to water?

A. The water in the Winkler field came in disorderly and in an uncontrollable manner, because there was no effort made to control the water. Water is a common hazard to everybody, regardless of where its position is on the structure, and the Winkler Field as a result today has been prematurely flooded with water, whereas the Yates, in that field the water is rigidly controlled. It is true in the Yates Pool the water is climbing higher and higher each day but that is the natural results of taking oil, the ratable amount of oil throughout the entire pool so as to maintain as nearly as possible the original equilibrium which existed at the time the first well was drilled. That is, the oil water was on a plane, just like the sea level is a plane and if they maintain that it gets the maximum amount of recoverable oil.

Senator Pollard: What was the potential production of oil in the Yates Field?

A. The potential production of oil in the Yates Field?

A. The potential per acre?

Q. Yes, sir.

A. Do you mean the twenty-four hour potential?

Q. I mean the possible recovery.

A. The ultimate?

Q. Yes.

A. I don't know whether any particular figure has been assigned to that, for this reason, in the center of the Yates Field they have not drilled wells clear through to the water level and for that reason they are not yet aware of the porocity or the amount of reserve underlying the undrilled portion of the field. You must remember Yates only has four hundred wells to twenty thousand acres and rather than go ahead and determine that, they will get all of their oil with a minimum loss.

Q. What is the ultimate acre recovery estimated of the Winkler Pool?

A. A small fraction of the Yates Pool.

Q. At what time did each field come in, what year?

A. They came in about the same time, 1927, and 1928.

Q. What is the depth of the oil producing sand in the Winkler Pool?

A. The Winkler Pool is about thirty-one hundred feet,—from twenty-nine hundred to thirty-two hundred feet, and the Yates is about . .

Q. (interrupting) I mean the sand. How deep is the oil sand?

A. That is lime out there, that isn't sand. It is lime.

Q. How thick is it?

A. In cavernous lime the thickness is not the governing factor. It is the size of the cavern. If it happens to have large caverns the sand in this lime will contain larger reserve than if it had all caverns.

Q. Anybody knows that. You made a statement that the Yates Field, the reason you were having continuous recovery, and so forth, was proration was put in the first day. Then you referred to the Winkler Pool as rather rushing it at this time?

A. Yes sir.

Q. Isn't it true you have got to find out the depth of your oil sand or your cavern, the amount to be produced, the ultimate recovery per acre, and all of those things, to take into consideration when any field will have water . . .

A. (Interrupting) the Winkler Field is somewhat different. Billions and billions of feet of gas underlying the oil was willfully wasted in order to get more oil, a higher daily rate of oil. The maximum recovery was not in the minds of those operators, they opened the wells wide open in the face of a water hazard.

Senator Purl: Who were the operators?

A. Numbers of them, majors and independents both.

Q. Who were the majors?

A. I don't know the particular companies.

Q. Can you mention one of them that wasted billions and billions of feet of gas?

A. I didn't say in any particular pool.

Q. You said billions and billions?

A. Yes, sir.

Q. Can you name one company that did that?

A. No, no one company did it.

Q. Can you name one that did it?

A. No, sir. I said it was done. I am not stating any particular company is responsible.

Q. Can you name one company that did that?

A. Any of the companies that drilled a well.

Q. Can you give the name?

A. I don't know the names of them, no, sir.

Senator Pollard: Were you out there when that was taking place?

A. Yes, sir.

Q. How many times?

A. One

Q. Do you know how everything was carried on from that one time?

A. No, sir, but I know from the figure. Those matters have been discussed in engineering meetings very thoroughly.

Q. Now then, you still haven't answered my question.

What is the ultimate acre recovery in the Winkler and in the Yates?

A. The Yates would be the higher of the two.

Q. Then it would naturally go longer without water coming in the sand or in the cavern than the Winkler Pool?

A. No, not necessarily. The manner in which you produce a field has something to do with the time at which water strikes it.

Q. And the amount of oil to be recovered also determines that?

A. Not necessarily, not necessarily.

Q. As a geologist you say that if you have an oil sand that will have an ultimate acre recovery of five thousand barrels per acre and in another field one with a hundred thousand ultimate recovery, that the amount of oil present in the sand will not have anything to do with when the oil gives out and the water rushes in?

A. No, I didn't say that.

Q. What did you say?

A. I stated that because one field may have a larger initial reserve of oil, the nature of the water hazard there in that particular field may be such that its ultimate recovery is lower than some field that has a lesser reserve.

Q. Regardless of how operated?

A. No, sir, I didn't say that, not regardless of how operated. If both are operated in the same manner, certainly the ones wtih the larger reserve will have the larger recovery, but I maintain that the Winkler and the Yates were not produced in the same relative manner.

Q. They never have penetrated the depth of the oil sand, the producing sand? They don't know how deep it is, do they?

A. Yes, sir, they know roughly.

Q. You said just now they never had touched the water?

A. I stated they didn't know what the porocity was.

Q. I want to know—what I am trying to get at is some basis of comparision of the two fields in my own mind, how deep is the oil producing sand in the Yates field, how thick it is?

A. About three hundred feet maximum in some places, or on the edge of it, less than that. It is variable. But in cavernous lime the thickness is not the only indication of reserve, and if you base your indications on thickness purely they are apt to be erroneous.

Q. Going back to the Joiner field —I think I am entitled to have that. In the eastern part of the Joiner area the oil producing sand is very thin, isn't it?

A. Yes.

Q. Now, you stated that those wells, a large number of them, have quit producing?

A. Quit flowing. Not producing.

Q. Isn't it true that in the west end of that portion of the East Texas Field the oil sand depth has not been definitely determined at this time?

A. That is true, yes, sir.

Q. And that the deeper the oil producing sand is, the longer it will flow oil?

A. Well, there is one thing I wish to state—

Q. (Interrupting) I want to ask if that isn't true, or not?

A. Just a moment. You question implies it may have great sand thickness.

Q. It does.

A. I stated there would be no production below thirty-three hundred feet, below sea level. You imply this sand might be very thick.

Q. The other day a client of mine drilled fifty feet below where they said they could never get anything and didn't get salt water.

A. I saw a well last week that went to a depth of thirty-eight hundred feet, some two hundred feet below the pay sand and didn't hit the sand. The man inquired how could such a thing happen and they went out there and examined it and found the well tilted at a 29 deg. angle, so that very likely if your well

is fifty feet deeper and still didn't hit the sand—

Q. (Interrupting) He got a good well, one of the best?

A. Did they have a survey of that well.

Q. I guess they did. I don't know what that is.

A. They had a survey of it and they are below 3320 feet?

Q. They are fifty feet below they said they couldn't get anything. But back to this proposition, isn't it a fact there are very few wells in that Eastern area that ever got any oil that quit producing and just a few of them are on the pump?

A. No. I say there are quite a few of them on the pump. When I was there in March—I wish to tell you the production of some of the wells I observed in March, four months ago.

Q. All right.

A. Here is one, the Ball Malone No. 1. I visited this well during the last two weeks of March.

Q. Did you visit it personally and inspect it?

A. Yes, sir; I visited every well in the field; there were 65 wells there, and I visited all of them, and observed the tubing, back pressure, and so forth, and made a report to the Railroad Commission. The initial production on the Ball Malone was 2600 barrels; but the daily average on March 11th was 1692 barrels; and on March 18th, 535 barrels, a week later.

Q. I happen to know the history of that well. Isn't it true that offset wells were drilled all around that, and released the pressure?

A. The same thing happened in the Kilgore area.

Q. Isn't it true anywhere you drill oil wells, that when you drill several wells, it releases the pressure on the initial well?

A. Why didn't it do it in the Lathrop area? This well was big enough to produce 2600 barrels; I wouldn't call that a small well.

Senator Small: I would like to make a motion that the witness be permitted to complete his statement before anybody interrogates him, and then that he be submitted to cross examination, but not before. This may seem delightful to some of the membership, but it is not to me. I would a lot rather hear this witness make a continuous statement than hear most of the members who are interrupting him, just at this time.

Senator Pollard: Suppose witnesses do as this man has done, ask for questions?

The Chairman: Questions dealing with particular wells in this area, concerning their particular rock or gas pressure, or production, I don't think is particularly enlightening to this committee. I think the area as a whole might be considered, and I want to insist that members of the Senate adhere to the rule we adopted not to interrupt a witness until he has completed his statement.

Mr. Greer: I want to know if we members of the Senate who are not members of the State Affairs Committee are permitted to ask questions, or is this simply a State Affairs meeting, at which we can listen, but cannot ask questions, or make a motion?

The Chairman: The resolution adopted by the Senate provides that any member of this Senate can examine and question witnesses. As to making motions that is for the committee to determine.

Senator Woodruff: I want to cooperate with the committee in every way possible to get the greatest amount of information in the shortest possible time, but when the gentleman was talking about that particular map or chart he has there, and apparently was about to complete his discussion of it, there was one question that occurred to my mind that I would like to ask before he gets away from that particular line of discussion, and before he gets away from that chart.

Mr. Chairman: We must dispose of Senator Small's motion.

Senator Woodruff: I am talking about the motion. If the Senator's motion is adopted as made, it would be necessary for me to hold in abeyance my question, which goes directly to that chart, and directly to the thing he has got through saying, and I think while it is fresh in the members' minds as to what was said in reference to rock pressure, water hazards, and so forth. The question I had in mind with reference to Well No. 3 on that chart is pertinent, and before this motion is put, I think we ought to take that into consideration.

Senator Oneal: I don't think we need any motion. We have a rule that was adopted yesterday, which is this: The man who puts a wit-

ness on the stand shall get through with him before anybody else is permitted to ask him any questions. Mr. Woodward put him on the stand, and asked him to go through these maps. When he gets through, under the rule adopted, it will be for the Chairman to recognize the different members of this committee who may wish to ask questions. The last question the Senator from Coleman asked was to take these maps and go through them and explain them, and that is what I understood the committee was hearing. So I don't think we need the other motion.

The Chairman: I am going to entertain the motion by Senator Oneal. I think the rule adopted and carried in the resolution, a copy of which I have here, was that the witness summoned shall be questioned by the party placing him on the stand, and at the conclusion of the questioning or the development of the facts by the one who summoned or subpoenaed the witness, then that witness is turned over to any other member of the Senate. I would prefer that be adhered to. I am going to put this question and call the roll.

Senator Martin: I should like to hear the motion.

The Chairman: The motion by Senator Small is this: That the witness be permitted to make his statement before the committee before he is asked any questions by any member of the Senate or the committee. That is the motion.

Senator Thomason: The Resolution provides for that, and we discussed that in the committee, that the member who called the witness would have the privilege of asking him all questions that he saw fit. In this instance, this man was put on the stand by Senator Woodward. He is his man at this time, and rather than ask him question after question, after asking him who he was, where he came from, and what he had been doing, he asked him to go ahead in his own way and make statements relative to the maps he had before him; and I think, until he gets through those statements that he makes in his own way, he should not be interrupted. He is Senator Woodward's witness, and no one else has a right under the resolution we have heretofore adopted to question him at this time; and I think a motion of this kind would be out of order at this time, and that we should go right on and nobody interrupt the gentleman until he gets through the statement requested by Senator Woodward.

Senator Pollard: Mr. Chairman.

Senator Small: I believe that perhaps my motion is out of order, and that the Chair under the former resolution adopted is warranted in sustaining the objection as to any interrogation by anyone except by the party who put the witness on. Since realizing that, I think I shall withdraw the motion, and permit the jury to rule on that.

Senator Pollard: If I have done anything against the rules of this committee and Senate, I apologize, but the witness turned around and wanted to know if anybody wanted to ask any questions. Prior to that I started to ask him one, and the gallant Senator from Harris objected, and in the meantime he turned around and several Senators asked him questions, and then I asked the Chair and Senator from Harris if I could ask some questions. I realized at the time that I violated the rules of the committee; but if the witness turns around and asks a fellow if he has any questions, should you say nothing?

The Chairman: I would suggest this.

Senator Pollard: I will do any way to suit the Chair.

The Chairman: I said I would prefer no shooting cross questions during the statement of the witness, and the Chair is going to hold from now out that no question shall be asked until the witness has concluded his statement, and the party who called him has concluded with him.

Senator Martin: He didn't know the rules that were adopted here.

The Chairman: I understand that, and that is the reason I didn't interrupt immediately. From now on no question will be permitted from any member until the witness has finished completely his statement, and the party who brought him here shall have finished. Any member who has any question to ask the witness, please make a note of it, and we will proceed in an orderly manner. Go ahead, Mr. Foran.

A. In the case of this pool here— of the normal pool— it is observed that Well No. 3 has penetrated practically the entire thickness of the pay

without encountering the water, and, of course, would not encounter the water, no matter how deeply it went, within the limits of this map. However, through a process of time and displacement, this water, keeping the same level on both sides, rises vertically until finally it is level—comes along like this, until it strikes this well. By that time, this well has gone entirely to water, and this one nearly to water, and water is making its appearance in the highest part of the structure, and that marks the final stage in the life of the pool; and the manner in which this water rises vertically and moves laterally determines largely the amount of initial reserve which will be actually recovered. Certainly, a water hazard like that has something to do with the amount of oil you take out. In other words, if you totally ignore that water hazard, you will get different results than if you respect that water horizon. That is the reason I say there is a difference between the two. Exactly the magnitude of that difference depends upon the manner in which it is controlled and other physical features with which the operators are familiar. So much for the average pool there.

I think now we will put the map on the floor up here. In this particular case we have a more localized section of the pool. This is any pool, and does not refer to any particular pool.

Senator Woodward: In referring to those maps, will you please refer to the Exhibit, so the record will show.

A. This map is Exhibit "D," which illustrates a small or local section of any producing sand, which is underlain with bottom water. There are four wells illustrated. It will be noticeable that if you check the depth of the penetration into the sand, all four are approximately the same. They were drilled, of course, at about the same time, and penetrated the same amount of sand. Well No. 1 is produced under what is known as back pressure. In other words, it resists the entire force of the oil and water combined to flow. No. 2 is a well that resists that force with a lesser power; and No. 3 is a well with still less resistance. No. 4 is a well wide-open; in other words, it flows at its potential or absolute power of the formation to produce its fluids, whether oil, water, or both. Normally, the distance between these wells is 300 feet. Some pools are 660, and some 440 feet, or variable distances. For our purposes we will call these 300 feet. The reason I adopted 300 feet is because it is the minimum distance at which wells in Texas may be drilled with respect to their closeness to each other, except by special permission of the Railroad Commission. Therefore, if we consider these as wells drilled close together, it is reasonable that each well will drain a mean radius of 150 feet. It may drain farther than that, or it may drain somewhat less, but that is the mean drainage area amongst a group of wells. In the completion of this well—this map, however, is not drawn to scale, but it illustrates the principle. This well was completed we will say within ten feet of water. We will say they had a total of 30 or 40 feet of sand, or they drilled within ten or fifteen, or even twenty feet of water. Any way, they expect ultimately to drain laterally 150 feet, but in order for that oil to move through the resistance offered by 150 feet of that sand and at the same time to repel water, which is only 15 feet of that well, we must recognize that the relative speed at which those fluids are taken out will have something to do with the amount of water that will enter it in respect to the amount of oil that enters it; in other words it becomes a difficult matter to ignore all sub-surface conditions and expect to drain oil through 150 feet and not drill water through 15 feet. Therefore, all wells in the thinner sands—I mean up to 50 or 75,—depend upon lateral drainage for the major portion of their ultimate production. Therefore, the oil comes from a greater distance than the water right below that well. Therefore, if a well is drained rapidly, the water will rise rapidly, because it is closer and has earlier access than the oil with 150 feet of the same resistance sand, and the lesser rate at which the oil is taken out, the lesser rate at which the water encroachment takes place, and the ideal situation would be to bring water up on a horizontal plane. However, if you wanted to do that, and observed ideal conditions, the time required to recover your production would be so long that it would not

be economical. Therefore you must give some respect to the fact that you want to get oil out of the ground in a reasonable amount of time. Therefore, you are entitled to draw all that at a faster rate than theoretically would be ideal, and the fact that a man has water in his well is no discredit, it is a natural circumstance or a natural reaction to his operations. However, if oil is taken out at too rapid a rate there are always a few wells in the field which are forerunners of trouble and indicate whether or not those wells are being flowed too widely open. Now in this particular case when a well gets in this condition they usually resort to plugging off that water. He is getting, say, 90 per cent of water and knows that the biggest amount of that water is coming in from the lower part of the well and he plugs off to reduce the water, and at the same time reduces the amount of oil. That program is feasible under certain conditions. I will illustrate this by the next exhibit.

This picture here, as the one below it, is on a somewhat larger scale, so you may see it a little more clearly. This is Exhibit "E." Here are two wells, No. 1 and No. 2—both of them drilled to the same depth in the same field but produced widely different rates, one of them flowing entirely unrestricted and the other one with considerable restriction. After a period of time, since all resistance is relieved or as much as possible from the field, it is natural that water, being closer to the bottom of the well than a large portion of the reserve is, will have access to it and after a well has been producing for some time this is what happens: All the oil in the lower part of the said well has been displaced by water and the well goes largely to water, making very little oil. Under those conditions operators believe the best thing to do is to plug the well. In the meantime this well here by the same operator is being pensioned; it may be an experimental operation or otherwise. He observes no water there. Now, if this well is plugged off here is what happens: If he merely shuts it down, salt water would rise up to an elevation which is equivalent to the force that drives it. In other words if there is 500 pounds in this reservoir, salt water will rise up 1000 feet—not exactly a thousand but depending upon the weight of the salt water. If the well were allowed to stand idle for any length of time the result would be that the water in below would find its way here. This is the first full head of water. But the difference between that condition and plugging that well is one and the same thing. The very fact that a column of water is in there makes no difference. There is no greater hazard than if this well were plugged off. When this well is plugged off you merely plug the bore of the hole; you don't plug the sand 10 or 15 feet back. When that plug is not there the reservoir pressure here is exactly the same. The remedy for that situation is don't let it happen. In the case of the other well it will continue to produce and finally water will strike it too, but at a later date, because it has produced less oil at a lesser rate. Perhaps it is too low; if so, it may be observed and see what the reaction is. These things cannot be told with absolute accuracy. However, in approaching a program or trying to find out it is always best to take the conservative path, because when water drowns the sand there is nothing—in other words, if the damage is done you don't get a second chance. Therefore, it would seem to be best to stay on the conservative side and see whether you are right first before you open the wells wide open and take a chance on the water hazard.

Now, back again to the East Texas pool, the area shaded in red represents roughly, from forty to fifty thousand acres; it is the area or that portion of the field which is indicated as being underlain with water. These three black dots here —this one here is the Joiner area discovery well; this the Bateman Discovery Well, and the Lathrop Discovery Well. Those wells were discovered in 1930—in the last quarter of 1930. The fact is that the Lathrop well and the Joiner well and even the Bateman well in being drilled so deep into the sand, produced for several months without showing any water. I visited the field on the 15th of March and remained there until the 22nd of March. During that period of time I visited 64 or 65 wells in the field—every one that was producing at that particular time—and at that time there was no

water observed in the East Texas field anywhere. However, for anybody to state that there is no water or little possibility of water would seem somewhat erroneous. The Railroad Commission asked about that in particular: "Is it a fact or is it possible that a water hazard exists—in other words, has the Woodbine Sand been drilled into West of the field or at points North, to indicate what the water hazard is?"

A. "Yes."

Now we will take the well in this other part of Upshur, drilled by the Amarada People. That well was drilled at approximately two years ago and at that time they encountered a very light show of oil but a heavy flow of salt water. On the strength of that pair, there was this enormous field of next to it yet undiscovered. About the same time the Owen-Sloane test endorsed east slip county was drilled. In the Smith County well they encountered salt water. This was to the west of the field. Then southeast of Troupe about six miles another well was drilled into the Woodbine sand and went below the oil and it was a salt water well. All of those three wells were drilled and recorded in the Railroad Commission office before the discovery of the big field. After sixty-five or seventy other wells were drilled it was common knowledge that somewhere between those wells and the southern border coast water existed somewhere, and under exceptionally high pressure, because those wells filled up very high on the test.

Now in these smaller black dots, those are wells whose bottom hole elevation is less than twenty feet above the water table, if we accept thirty three hundred and twenty feet below the sea level as being the main water table, which is generally accepted by all operators in that field. There may be a well or two which would indicate that the water table was below there, but the big majority of the wells' hole bore is straight, has indicated that the water table is thirty-three hundred twenty feet below sea level. Then these wells which are drilled within twenty feet from that water table are certainly hazarded and any rapid withdrawal of fluid in areas which are underlain with bottom water reduces the pressure in that area. If the pressure is reduced and the rate at which that water will move depends upon the physical characteristics of the sand, and the distance between the water and the point of low pressure area, or the point of heavy drainage, if we call them the same. The arrows indicate the direction in which the water generally flows. It is interesting to note that at the present time the area in which water is the greatest hazard at the present time is the west Kilgore area or west Bateman area. You will also observe that there are numerous wells very close to the water level, not necessarily into the top of this end, but they are close to this water level, because some wells penetrated the sand and went close to the water level before they knew where it was. It has been suggested that some operators who drill their wells in certain parts of the pool will not be restricted. It has been suggested that some operators stop their wells at twenty or thirty feet above that level. The best practice is not to drill closer than twenty-five or thirty feet to the water. What is a man going to do whose well is nearer the edge of the water, or who hits the sand ten feet from the water? What is he going to do? The answer is he has gotten his well and it is destined to produce considerable oil and meet three mature abandonments. Which course it shall take depends on the operators, as a whole, and to a certain extent everybody has a certain responsibility for the manner in which the water gets in. Every operator in the field has a certain responsibility for the manner in which the water comes. If this water is uncontrollable and is evidently drowning areas or damaging wells somebody in that field is responsible, probably not any individual operator. To control water in the most effective manner calls for the cooperation of everybody, whether he is on the east edge or not. If he is on the east edge the rate at which the water displaces the oil has some effect upon the oil in his well and is somewhat beneficial to him. It may not be as much benefit to him as others closer to the water, or the strip that is somewhat east of the water area or somewhat west of this thin strip. There is a longitudinal section of the field in the middle which is reasonably

immune from the damage of water at the present time, but which is also not facing a rapid decline in reservoir pressure, then the wells would go dead and go down. So prior to the time they went dead they were accompanied by rising gas-oil ratio. The reason for that is that the sands are moderately thin, with respect to the other portions of the field, and having to recover the oil from greater distances in the sand it required a greater amount of gas to drive that oil through the sand. The result was that when the oil was delivered to the hole through a long stretch of sand the final pressure at the bottom of the hole was in submission to flow the flow so it had to wait until the gas pressure accumulated and that is what caused increase in the gas-oil ratio. However, we have this evidence, there is certainly a very limited amount of gas in the east part of this field, and that portion of the field which is remote from the water is going to depend for some time to come on its gas energy for the manner in which the introduction is secured. It is therefore necessary to later, or necessary to earlier, or rather at the same time to consider some of the function in that gas delivering oil into the well. That is to determine what happened to the reservoir pressure in the different areas after gas has been taken out and a certain amount of oil has been taken out. One company operating in the field, the Amarado Company, has taken a great many old pressures, or the pressure at the bottom of the well, when the well has been completely shut in, under which conditions the pressure at the bottom of the well is approximately the same as the pressure in the sand surrounding the well for some distance away from it, or what is known as the local reservoir pressure. Those figures have been given and presented throughout different sections of the field. It is interesting to note in the Joiner area some bottom old pressures fifteen hundred pounds per square inch are still observed, and those high pressures are maintained in that section of the field. Within a mile or so east of there the pressure is down to eight hundred pounds, that is surrounding pumping wells. Eight hundred pounds of reservoir pressure is not sufficient to flow those wells, that is the reason they must be pumped. In the Bateman area the pressure has run to about fourteen hundred pounds per square inch, and in Lathrop area it is fifteen hundred pounds. The original pressure was around sixteen hundred pounds per square inch, it maybe a little above or below that, but that is the best information we have at the present time. Now in general the east strip is a strip of low pressure area; as you progress westward you encounter high pressure because you are in the portion of the pool where the water is replacing the oil almost as fast as it is being taken out. I do not say it it occurring as fast now, because if it would there would be no decline in the reservior pressure, or if there is a decline in the pressure it means that the water has not the ability to displace the the oil and gas at the rate at which it is being withdrawn today. Therefore to maintain the production and reservoir pressure in the eastern part of the field would call for an adjustment in the manner as the amount of the oil that is taken out.

The Chairman: Gentlemen, the Senate was to recess until four o'clock, and if it is your pleasure we will now adjourn.

Mr. Woodruff: I move that the Senate stand at ease for ten mintes.

The Chairman: The Senate or the the Committee.

Mr. Woodruff: The committee.

Senator DeBerry: There is nothing on the table, Mr. Chairman, that the Senate can do.

Senator Pollard: I move that the Senate stand adjourned until ten o'clock tomorrow morning.

The Chairman: It has been moved and seconded that the Senate stand adjourned until ten o'clock in the morning.

Senator Stevenson: I don't see any reason why we should not make it nine o'clock in the morning.

Senator Pollard: I accept your amendment.

The Chairman: It has been moved and seconded that the Senate stand adjourned until nine o'clock, all in favor of that motion let it be known by saying "aye', opposed no. The motion is carried.

Senator Woodward: I move that the State Affairs Committee recess until four-twenty.

The Chairman: It has been moved and seconded that the State Affairs Committee stand—that we recess until four-twenty, all in favor of that motion let it be known by saying "aye". opposed "no". The motion is carried.

A. This Exhibit F is a section of a field—any field, and it represents five wells of reasonably old age, been there a long time. The blue represents the water, and the black represents oil which are in the tight portion of the sand, very resisting portion. Well No. 1. is one that is of course now wholly within the water and has been plugged, as is indicated by the green. The next well, No. 2, has had a long life and drained out considerable oil. Wherever this water is now above that dotted line was formerly oil. That oil has been displaced and of course water is the principal product of these wells, although in two of the tighter areas it is still producing a little oil. In this particular well the well is making very little oil and the lower portion has been plugged because of the great quantity of water coming out of the well, and while it still has some oil to recover they didn't want to totally abandon it, so in a case like this they plug a part of the well but still leave the oil drainage open. This casing is set on top of the sand; that casing doesn't penetrate the sand, in other words, the bare sand is exposed. In this particular case the well is making considerable oil, also a great deal of water. In this case at a higher point in the structure the well is making all oil and no water, although water is slowly coming in that direction. This dotted line represents the original water level of any particular pool. After a great deal of oil has been taken out, if taken out very rapidly, it has the ability to displace rapidly in loose sand, but it takes a longer period of time for oil to drain through those tighter portions of sand than it does to drain through loose open sand. But in so many of the pools we have both tight and open sand in the same producing body. Then after all of this oil, formerly black oil down in here has been recovered by normal methods, the water has surrounded them they do not produce any more oil. During this period of time the orignial water table has moved from this to the new dotted line. Normally the dotted line should be level. It is practcally level in all pools in the State, but in this case you wil notice it is higher in here, maybe higher in here, and lower in here (indicating on exhibit) and higher in here. That is because your lower areas produce their oil in advance of the tighter portions of the sand, and water in turn occupies the lower portions of the sand before it occupies the tighter portions of the sand. Therefore, if we are to make full recovery from the sand in which there is both tight and loose sand the physical conditions indicate that we must produce it at no faster than a rate which will allow at least a reasonable portion of that tight sand oil to be recovered. Too rapid recovery results in a condition like this (indicating on exhibit). Now, they say, under those conditions might it not be possible to re-drill new wells and get it? Suppose they do. Let's say they drill a well in between these two wells. They drill between them and finally hit some oil there. They go thru considerable water and some oil here, but that oil doesn't come out at a nice flush rate. It is already in a sand that is so tight it didn't drain out in normal life, therefore losses could be expected unless oil was around three or four dollars a barrel—at least it would not be feasible to re-drill drowned out portion of pools at from two to four thousand feet deep, so the best remedy is don't let that happen any more than is possible. You may say "How do you know there is tight sand in here and loose portions in other places?" In drilling these wells we have cored them—taken cores. It shows this portion in here saturated with oil, but rather fine grain, then a loose portion, and then some tight again, and then loose. We have taken this core and in different fields in Texas those cores are taken and they pass water through them to find out at what point water can penetrate the different sands. With respect to the East Texas Field, samples taken there recently show that water filters through some sand or cores taken from wells in much faster time than through other cores. That doesn't mean one part of the field will absorb any faster than another, or anything of the sort, but it does mean that sand is not strictly uniform, it is not strictly uniform, it gives up

its oil at different rates even in places where the reservoir pressure is the same. Therefore where you have water coming in in the west side of the field, there isn't a water hazard all over the field, but certainly in the extreme west portion there are some water hazards there. The greater portion of the field, however, is not under what we call a water hazard at the present time.

Senator Woodward: Before you leave that phase of it I want to put you to a hypothetical case and ask your opinion. Assuming that two wells are drilled three hundred feet apart to a sand that is equal and the gas pressure is the same; the nearness of the water is the same; what would be the difference in the ultimate recovery of oil in those wells where one is permitted to run wild, so to speak, and the other is pinched to a conservative flow?

A. The well which is permitted to run wild undoubtedly makes a higher daily rate of oil over a period of time, but if under conditions like these certainly its ultimate recovery will be lower than it would be if handled carefully. In some cases like that, certain wells, water flowed during periods when they were taking potentials, just a short period of time. Even under those conditions water may come in. I don't say that is general, but in some cases it does.

Q. Assuming that the potential of each well would be, we will say, a hundred thousand barrels, what in your opinion would be the loss, speaking in percentage, on a percentage basis, of the well that was permitted to flow unrestricted, and the well that was pinched?

A. The results of that would be variable but it may be anywhere from a fifteen per cent loss up to even twenty-five or thirty per cent, depending upon variable conditions. No set figure would be accepted for that without certain reservations, but I say anywhere from possibly ten per cent on up to maybe thirty or thirty-five per cent.

Q. And that would be caused by reason of the same water entering by reason of this uncontrolled production?

A. Yes. I have one more exhibit here. I had occasion during the month of May to visit in the East Texas Field, with the Railroad Commission's Deputy Supervisor in that district. He asked that a well be opened up to see whether or not the method of taking potentials, or whether a well that was allowed to flow wide open might not constitute an immediate water hazard. There are certain cases where it might. If a man near the water's edge of a field is taking a potential or should want to produce part of the time and load his storage up and pipe off at another time, whether that sort of practice might not create a water hazard. This particular well is in Bateman area and was making twenty-one hundred barrels a day. Here is a sample of the oil; no water. Then at the command of the deputy supervisor the well was opened up from a rate of twenty-one hundred barrels a day to seventy-three hundred barrels a day,—I beg your pardon—about ninety-seven or ninety-eight hundred barrels a day, four hundred and fifteen barrels an hour, and under those conditions sample No. 2 was taken twenty minutes later, and sample No. 3 was taken ten minutes after that.

Q. Let the record show what that shows. We can see it, but let the record show.

A. It shows that as that well remained open, even over a two hour period of time, the water had increased, from a straight pipe line oil in sample No. One to nine and two-tenths per cent water in two hours time. The reason for that was the well happened to be drilled quite deep and the bottom of it was fairly close to the water table, as a matter of fact around six or seven feet away. That well was fairly close to the middle of the field. You might say he should not have drilled that close to the water. That is entirely true, but what are you going to say to the thousand other wells on the west edge of the field who in spite of the most skillful completions possible find the top of the sand only a few feet from the water. They are inherently facing this situation whether they want to, or not. That is the point which the Railroad Commissioner, with respect to running some of those wells wide open took cognizance of. About ten days ago I also had occasion to visit a well on the west edge of the field with him, a well which was making water, running fairly wide open, suddenly went to water and without any no-

tice went dead. It went dead at night, around ten or eleven o'clock at night, and the next morning it was observed in a dead condition. That afternoon the company operating an offset well also showed a small amount of water and got in touch with the Commissioner and asked him to come out at once and make a report. The Commissioner asked if I would accompany him. I came along and noticed that the well was in that condition and while they were preparing to pump that well, that water is standing in the well with a fairly high head, and is certainly a hazard to the neighboring wells. They were installing standard pumping equipment,—comething new to that field. To think pumping equipment is already being considered in that section of the field which was such a high powered producer not so long ago, but the fact that there is a certain amount of hazard in the field is recognized. However, with respect to that water hazard I am speaking of, at the present time that has its limitations. It isn't a case of the whole field being a water hazard or danger of irreparable loss, but it is certainly the right time to take stock of that situation and see what should be done to guard against a furthering of that condition and the aggravation of those conditions which have already asserted themselves so plainly.

Q. I wish you would take this document, which is a bill pending before the committee, and on page 3, section 8, I wish you would follow me as I read to you the definition of waste. Commencing with sub section B: "Waste incident to or resulting from so drilling, equipping, locating, spacing or operating wells as to reduce or tend to reduce the ultimate recovery of crude petroleum oil or natural gas from any pool" I wish you would state to the committee by way of summing up or giving a summary of what you have testified as to what would bring about waste as is defined in that section?

A. Well, in the first case, you speak of drilling. In the case of drilling some restrictions must be made for the water situation because if wells are drilled too deep in the neighborhood of water, one operator may cause considerable trouble to neighboring wells, more especially where those wells are spaced closely. That is the point where the 300 foot spacing may be a factor. However, the spacing of wells is a subject that requires more than a mere statement of the mathematical distance between wells. In the equipping and locating of wells, of course that is a matter of land ownership and progressive development; until water is actually determined in a certain direction, any operator is legitimately allowed to wildcat or drill his well to see where he is. By ultimate total recovery of natural gas from any pool or area, I presume you mean the ultimate economic maximum recovery. In that case, this is a desirable objective, and when production operations, and any operations, tend to reduce the economic ultimate recovery, that is physical waste.

Q. Now, the matters and things you have described from these exhibits, and the hazards and dangers incident thereto, are in a way covered in this definition that you have just now read?

A. Yes, sir; they are covered within certain limits.

Q. In other words, in this definition of waste resulting from drilling, equipping, locating, and spacing, or operating wells, as to reduce or tend to reduce the ultimate recovery, those various words, "drilling, equipping, locating, and spacing" are in a sense synonomous; in other words, they are kin to each other?

A. Yes, sir.

Q. Now, get to Section "C," waste incident to or resulting from the unnecessary, inefficient, or improper use of gas, gas energy, or water drive, in a pool or well. Will you state to the committee in a general way—summing up what you have said would happen to produce waste in that respect?

A. The drilling in of wells in the upper part of the structure, or where there is a considerable amount of free gas lying above the oil. In a case like that, if the free gas is not cased off, or taken into consideration, it may result in considerable withdrawals of free gas.

Q. Now, take Section "D," surface waste, including unnecessary or excessive surface losses, or destruction of crude petroleum oil or natural gas, without beneficial use. How does waste occur in that respect, and illustrate it?

A. If excessive amounts of oil are

produced, of course it has to be cared for on the surface in some manner. It must be consumed, or it must go to storage, and I would consider that excessive amounts and unnecessary storage is equivalent to physical waste to a certain degree, since underground storage is considered by everybody superior to surface storage; but surface storage up to a certain amount is necessary, but unnecessary storage is equivalent to physical waste.

Q. How about evaporation?

A. That is the manner in which a good amount of physical waste occurs, since oil is a partly perishable article.

Q. Can you describe or state specifically about this evaporation?

A. In the higher gravity oils—by this, I mean 36 to 45—they may in the warmer climates evaporate as much as from two to as high as five per cent, depending upon the efficiency of storage.

Q. Within what time?

A. Within a year's time. The first year sees a greater portion of the evaporation, and after that period, each successive year that it is held in storage shows a lesser loss, because the more volatile portions leave first.

Q. Now, in Section "E," underground waste, including waste incident to or resulting from any act of omission that reduces or tends to reduce the ultimate recovery of crude petroleum or natural gas from any pool or area.

A. By an act of omission, I assume you mean any effort or act, which is known to be beneficial, and which is not applied, and it results in a loss.

Q. Will you just explain, just to illustrate, how waste could occur by omitting—I will put it this way: Suppose you failed to plug a well at the bottom when it should be plugged in order to keep out the flow of salt water?

A. That would be waste, yes, sir.

Q. That is an illustration?

A. Yes, sir; or failure to measure carefully the bottom hole elevation, and drilled too deep, and failed to plug back.

Q. I believe that covers the several definitions of waste, and I do not know of any other question that I want to ask you in connection therewith, unless you have some further explanation or further definition.

A. In speaking of waste I predicated all my statements upon reasonableness—that reasonable efforts be made to impose these things; unreasonable expense, or unreasonable efforts is not my interpretation of the obligation.

Q. I believe, Mr. Foran, this is all the questions I want to ask you at this time. I may later want to ask you some.

Mr. Pollard: May I ask the witness a question now?

The Chairman: Yes, sir.

Questions by Senator Pollard.

Q. Will you turn back to that map, Mr. Foran?

A. Yes, sir; if I may explain it.

Q. Mr. Foran, what is your theory as to the cause of the failure of the wells on the eastern edge of the East Texas field to continue to produce oil without standardization or without pumping?

A. Well, in the first place, the eastern edge of the field is the most remote from water. Water is one of the forces which tends to maintain the original reservoir pressure; it doesn't always have the ability to maintain it, but it tends to. Another reason is that oil over there is what is known as under-saturated; in other words, there was really a deficiency of gas in that pool. There was a very limited amount of gas in there. As you progressively drain more and more barrels of oil from a well you have to drain it from a greater distance. Even in the early life of the well, you must reach out for considerable distances to maintain the rate of flow. In the face of a limited amount of reservoir pressure, wells of that type,— without any reflection on the operators,— they will stop flowing prematurely with respect to other wells that happen to be more favorably situated; so that is a natural circumstance then.

Q. Wasn't the failure of these wells on the eastern side to flow because of the fact they were permitted to run wild?

A. No; not necessarily.

Q. That is what I wanted to get in mind.

A. No.

Q. A lot of those wells—the orig-

inal discovery well only made a head every six hours when it came in.

A. I have seen wells drilled in there that failed to flow. One was the Calk Well, which failed to flow on being completed, although surrounded by wells that were flowing. Those are natural conditions and fully understood.

Q. I wanted to get that in the minds of the committee.

A. That is true.

Q. What I thought you were trying to say was that if those wells had been prorated from the beginning, they might have been flowing?

A. No; those eastern wells are in a shaley ground. Those particular wells on the extreme east edge are somewhat different than the wells a mile away, so when you speak of the East Edge wells, I assume you mean those very thin sand wells in the East Joiner area. There are both types of wells. I would like to know the specific area to which you refer.

Q. I know there is a difference in wells, but none of those wells had very much pressure at the start?

A. You say they did not have much pressure?

Q. Well, some had more pressure.

A. Don't you believe that before any wells were drilled in there the pressure was equal everywhere?

Q. I want to ask you, as a physical fact, if that was true, why was it that the Joiner well did, in fact, flow, but made only one head every six hours; and we had a receiver appointed, and the first thing the receiver did was to standardize that well and put a pump on it.

A. Let me make a distinction between pressure and horsepower.

Q. What is it?

A. By pressure is meant merely the pressure per square inch. Horsepower is the massing of that power and the ability to perform work with it.

Q. What is it that brings the oil out?

A. Horsepower.

Q. Well, what have we been talking about here this evening?

A. Horsepower. Horsepower is the equivalent of volume of pressure. There is a limited volume of gas in East Texas. How many times did I say there was a very limited amount of gas in East Texas, which is saying there was a limited amount of horsepower for any given pressure?

Q. Isn't it true that most of the pressure we have in East Texas is water or hydrostatic, rather than gas?

A. No, sir.

Q. Isn't it true that a great water pressure from the west compresses the gas?

A. Not as fast as you take the gas out. If it did, you would have no decline in pressure. Water only has the ability to run through that sand so fast, and if you take out that gas faster than the water can displace it, the pressure inevitably drops.

Q. The more oil you take out, the less pressure you have remaining?

A. Under some conditions, yes; under some conditions, no.

Q. Where is now the greatest pressure in the field?

A. The West Joiner area. The actual measured rock pressure is higher than 1550 pounds in the West Joiner area.

Q. In that Kilgore area, what is it?

A. It will vary from 1250 to a maximum of 1440 to 1450.

Q. What is the pressure around the Arkansas well?

A. In the north, around 1100 to 1200 pounds; and west of that 1450 to 1500.

Q. How much oil has been taken out of the five, or six, or seven wells that the Arkansas Fuel operates?

A. I don't know; I could not give you an exact figure on it.

Q. It has been enormous, hasn't it?

A. Probably a million and a quarter barrels, or more.

Q. Probably two million barrels, isn't it?

A. I don't know.

Q. Out of how many wells?

A. Without that local area, within a half mile radius of the discovery well.

Q. That is a natural result when you take that much oil out?

A. Yes, sir.

Q. Then, what are you kicking about?

A. I am speaking about the West Joiner area.

Q. Isn't it a natural condition

when you get oil out for the pressure to go down?

A. In other words, you say it matters not how you produce your oil well, or how you utilize your gas energy?

Q. Wait a minute. I am asking you; I am not saying anything. I am down here to be educated. I want you to tell me what is wrong.

A. They are taking it out simply too fast. Let me explain. In the Bateman area, if you remember, they were taking oil out at a very rapid rate. What happend? The Gulf's wells, the K. & P. Brigg, the Turman, and Brightley, and others started to show water. Right away they took some bottom hole pressure measurements, and they showed from 1150 to 1220 pounds in that area, whereas they originally were around 1560 to 1600 pounds. That is recognized as somewhat low and dangerous, so they pinched in those well and produced them at lower daily rates, and the pressure came up approximately to 1450 pounds, and the wells showed a higher daily ability to produce oil. I maintain that if in the Joiner area the same thing had been done, similar results would have occurred.

Q. You mean that in the eastern portion of the Joiner field?

A. With the exception—please let me finish the answer.

Q. All right.

A. With the exception of the Bradford well and a couple of wells on the east edge. In my opinion those wells came in making hardly three hundred or four hundred barrels, and are not representative of East Texas. If you wish to discuss a particular little area of non-representative wells, all right, we will discuss those, that those particular wells, their physical condition was such, there was so much shale, that in spite of any effort they would have failed to flow. They are not representative of the field. I am speaking of the twelve hundred representative wells, and not five or six wells.

Q. I want to ask you this, Mr. Foran: What is your idea of how these wells should be spaced?

A. To be produced with respect to obtaining or accomplishing maximum beneficial effects of conservation, the pool should be produced as a unit or the equivalent of a unit; in other words, in some sort of cooperative manner in which operators here, there and the other place should recognize that they have certain interests in common and that within certain limits they may act in common with benefit to all. Now, I am stating within limits; I am not saying unconditionally at all. Certainly if it is to be produced for the best interest, to produce it in the manner of a unit pool or the equivalent or approach or whatever they call the visible approach, in view of the condition, visible approach to a unit operation would be beneficial to all.

Q. With regard to water showing up in the wells, not only East Texas but anywhere else, isn't it possible—isn't it true that water often shows in wells drilled by major companies, isn't it?

A. Oh, certainly; the law of physics respects neither major nor minor nor independents.

Q. Now, that being true, you can cut off that water after it gets into the well?

A. I explained on one of the drawings here plainly why you could not cut off the water. If you did, you cut off the entrance to a particular well, but not its access to the portion of the producing sand. Shall I explain that again?

Q. I think I understand; I think I got you. You first said you could not even cut it off from the well?

A. I beg your pardon. Maybe I didn't state it fully.

Senator Woodul: We might put that map up there again.

A. All right. However, I believe he understood the answer.

The Chairman: Senator Pollard, have you finished?

Senator Pollard: Not quite.

Q. I want to ask you if a perfectly operated field as indicated by you would that be operated on a gas-oil ratio based on a proration basis, or what basis would you use?

A. Well, if there were a number of owners in the pool certainly the principles of ratable taking should be incorporated in any manner of producing the field.

Q. What has been the effect in that field over there with 180 wells that were not connected out of 1200 others being connected to pipe lines?

A. Well, it is not the best condi-

tion for the field. I assume that had the other 1100 wells or the remainder of the wells been taking ratably, as they should have been, there would not have been 180 unconnected wells; they all would have been connected.

Q. Do you think they should be ratably taken?

A. I certainly do.

Q. Senator Woodward asked you a hypothetical question as to two wells—you remember that. I believe you stated that if one was producing 10,000 barrels a day and the other say 500 the well producing 10,000 barrels a day would get less recovery out of its well than the one producing 500 barrels a day?

A. Less recovery of its own reserve, not in actual barrels, no. A ten thousand barrel well would outrun the other ten to one, but would get a lesser percentage.

Q. That would depend upon whether the sand was porous or tight?

A. Exactly, yes, sir.

Q. There might be difference enough for it to recover more—

A. Yes, possibly it might.

Q. —than the one producing slower?

A. Yes.

Q. That is the theory that geologists differ on?

A. No, I don't think you are speaking of the same thing at all. You don't imply that it makes no difference out of which wells you take the oil? You don't mean that, surely.

Q. I was just asking for information.

A. No, sir. Your opinion is erroneous entirely.

The Chairman: Have you finished?

Senator Pollard: Yes, sir.

Senator Berkeley: May I ask a question?

The Chairman: Yes, sir.

Questions by Senator Berkeley.

Q. Mr. Foran, you have exhibited to this body an unusual familiarity with various oil fields in Texas, and in my judgment you have given us the benefit of a tremendous amount of technical knowledge. Now, then, based upon your knowledge of the oil stiuation in Texas, have you any well defined idea with reference to the legislative remedy? If you have, I would be very glad if you would state briefly to this committee just what your ideas are on the legislative remedy.

A. Well, I would say that the remedy lies in adopting the principles of ratable takings over the field. "Ratable takings" does not necessarily mean that one field must be almost entirely pinched in and others wide open; it means anything from completely pinched in to completely wide open, depending upon the relationship to other pools in the State, because the problem is statewide, and if an unratable taking—unratable takings or abnormal amounts in different parts of the State result in the abandonment of valuable resources in other parts of the State, I would call that an avoidable physical waste, and a remedy should be applied. The principles, if properly applied, will correct that more nearly than any other method I know of.

Q. Now, Mr. Foran, seeking a legislative remedy, would ratable taking of oil be the only element that would be considered?

A. No, sir; the principles of ratable taking do not stop with ratable taking itself.

Q. I want the benefit of what other elements ought to enter into the making up of a workable law concerning this matter?

A. Well, among them were some facts that I detailed that Senator Woodul reviewed. The same things that caused waste—for example, you might have 660 feet spacing and ratable taking, or you might have 300 feet and ratable taking; you may have a field highly restricted and ratable taking, or wide open. So ratable taking in itself is a measure of equity which promotes the best interest of all operators in the field. Others which are secondary to that and which are not in conflict with ratable takings are what Senator Woodward mentioned; proper use of gas and the proper spacing of the wells, regard for water and so forth.

Q. Mr. Foran, this further question: Do you think the minimum proximity of offset wells ought to be increased from 300 feet, as it is now?

A. I think if conservation of a higher order is to be accomplished, in some cases it should be; in some cases, no. The depth of the pools would have something to do with

that. When we come to the shallower pools, it is all right; in some deeper pools it is not. Moreover, on account of the extremely small acreage plots in certain sections of the field, it makes it impossible to adopt a wider spacing. Where the tracts are larger, I think some spacing program should be adopted. However, different fields should have different spacings, and to have one rigid spacing for all fields, I doubt if it would be best.

Q. Well, if four hundred feet is not correct in the deeper fields, what ought to be the minimum?

A. Well, the thickness of the sand and the sizes of the acreage tracts would have something to do with it. In other words, suppose you develop a fairly large pool in which all operators agree to adopt a certain spacing, 600 or 440 or any other figure higher than three hundred, as the pool develops a townsite plat is incorporated in the pool—I mean the pool extends until it embodies a townsite, it results in townsite drilling under those conditions.

Q. Mr. Foran, in your observations in the inspection of various fields in Texas, to what extent, if any, do you think that storage is too great in the average oil field in Texas? You spoke of that a while ago and said that storage ought not to be excessive. Have you found it to be excessive in any of the fields that you have visited? If so, to what extent does that obtain?

A. I have never made a thorough study to see whether it is excessive, but by the building of storage it could become excessive. Regarding the amount of oil that should be stored above ground, I am speaking of the future and what should be the objective in the future and what are the factors which conflict with that objective, and one is storage. The amount of storage above ground can become excessive. To give you figures, I would have to make a detailed study of the conditions before I would want to express anything in the way of a figure, but relatively there is such a thing as excessive storage.

Q. Mr. Foran, are you familiar with the Texas law concerning rehabilitation?

A. Somewhat.

Q. If you are, will you give the committee your opinion concerning the weaknesses of that law, if any?

A. Why, in my recent experience in which I have been cooperating with the Railroad Commission and advising them of my findings in the matter it appears that lack of penalties for violations of those rules actually encourages others to violate also, and penalties on those things, I believe, would restrict them to a point where they would not be so apparent as they are at the present time. Immunity from any damages is certainly encouraging to an operator to take advantage of a situation that does not happen to suit a particular situation.

The Chairman: Senator DeBerry wanted to ask a question.

Questions by Senator DeBerry.

Q. When you had the diagram of the Winkler and Yates pool, did I understand you to say they were alike in suction?

A. No, sir, they are alike in that they are both lime formation, a cavernous lime, not in the nature of a sand. I did say water was a force in both pools in displacing oil and taking the place of oil and gas and it has pressure as it is taken out. Water is a common agent in both fields.

Q. How long after the Yates pool was discovered before they began proration in that pool?

A. I believe it was in 1928. It was a voluntary proration among operators themselves.

Q. How soon after the discovery of the field did the proration begin?

A. The field was discovered I think in the fall of 1926, it must have been, it might be a year or maybe a year and a half. Mr. Richmond was present and he was the umpire there. I asked him, "How long after the Winkler pool was discovered until the field began to deteriorate?" Considerably less than that amount of time.

Q. Sir?

A. Considerably less than a year and a half. That is edge wells, that is wells that were drilled deep and those wells that made considerabe gas.

Q. There was a considerable amount of free gas that did not exist in the Yates field.

Q. There was more gas in the Winkler area?

A. Yes, sir.

Q. Do you think the Winkler field could have been saved if they had operated as they did in the Yates field, over what it is now?

A. I say this, whether the exact plan transferred to Winkler, I do not say that would have been the remedy, but I do say that if they had used the same ethics, if you call it that, or if they had been fortunate enough to have as few operators in Winkler as they had in Yates, and they had used the same plan, that is in principle, not in detail, but in principle, they would have been benefited. In other words I think you take a pool like Winkler and handle it without regard to those things would give you one result, and if you handled it with due regard to such things you would get another result.

Q. Why did they operate that way in Yates? Did they want to save expense or to save natural resources?

A. Both.

Q. Where they getting a pretty good price for oil at that time, those operators?

A. I don't know exactly what their price was, but it was good compared to what it is now.

Q. You think when they began prorating that field voluntarily it was for the conservation of their money purse or the conservation of resources?

A. I saw a report of a number of engineers for the different companies under date of November, 1927. I studied it carefully especially with respect to the function of gas and water, and I am sure their motives were toward real conservation, and it indicated almost conclusively that they would have increased benefit out of all proportion to their effort. Yes, I think their effort was largely toward real conservation, because where there is conservation it increases the profit. Both of them go hand in hand.

Q. I want to ask you a question with reference to the Bill Senator Woodward had you explaining. If that Bill were the law now, by observing that law to eliminate all waste as I see it, would that materially diminish the output of oil in the State of Texas?

A. Well, I don't know whether that particular law would. I would say the principles embodied in the law will, yes. The law as specifically stated, I am not enough of a legal mind to analyze that properly, but he has the principles there which will permit conservation, which will go to the benefit of the State and operate as a whole.

Q. The question I am trying to get at now, rateable takings is a long way of saying proration to me. I may be wrong, but it means the same thing to me. Now, under the provisions of his Bill, do you think there is enough existing waste underground and aboveground to-day that if methods were used so as to eliminate that waste it would materially reduce the output of oil in the State of Texas?

A. Well, I don't know, I would have to study that over very carefully. I am not familiar with the details of this bill. The first time I saw it was here and he asked me to discuss a few definitions and the question of waste, but I would not want to commit myself without reading his bill and analyzing it.

Q. I was trying to say that if the bill carried into effect this conservation it might reduce the output of oil from the State of Texas?

A. I don't know why it would, not so much, it might; it would not be serious. When you say reduce it do you mean two or three hundred thousand barrels per day, or fifty thousand barrels per day?

Q. What is the total output per day now?

A. It is above nine hundred thousand barrels per day. Materially would be a hundred thousand barrels.

Q. Or two hundred thousand?

A. Yes, sir.

Q. It would be a matter of degree?

A. Yes, sir, it would.

Q. In other words, the questions as I see it, I may have to explain it to get my question over to you. Everybody that is here knows that if you don't cut down the total number of barrels that are flowing we would not be here. Everybody knows that that wants to know it. Now, I want to know if you think there is enough waste going on underground and above ground so that if it stopped it is going to make oil go up?

A. I don't know.

Q. What do you think?

A. I am not discussing price at

all. I don't know whether it would cause prices to go up or down.

Q. Would it increase the output to the extent that it might cause it?

A. Rateable takings might enable you to take out more oil than you are taking today, and it might take less. Until rateable takings are applied and observed no man can answer that. Give me rateable takings and I can answer your question.

Q. Repeat that.

A. Until rateable takings have been observed in Texas I am unable to answer the question. If rateable takings are observed your questions would be answered correctly.

Q. Would you advocate rateable taking further than to carry out a program of eliminating waste?

A. No, sir.

Q. You would not?

A. No, sir.

Q. Then if carrying out your program oil will still stay so low that the wells in West Texas and various fields today could not be operated at an economical cost would that be your idea of an economical loss or a physical loss?

A. Rateable takings will take care of that situation. The situation which you call for would not occur under rateable takings.

Q. In other words, rateable takings if applied goes further than to eliminate physical waste?

A. Only to eliminate physical waste you must consider the State of Texas as a whole. If there are certain pools which have recovered oil, if rateable takings prolonged their life it is a good thing, and rateable takings properly applied will take that into consideration. It is the lack of rateable takings that has produced the present situation.

Q. As to the physical waste—I understood you to say you might eliminate physical waste and recover more oil per day or per month than you are taking now.

A. I said if taken rateably. Now they are not taken rateably. If they are not taken rateably now, how are you going to know? It is possible for rateable takings to take a larger amount and still there would not be any waste.

Q. What I am trying to get those avenues of waste to which you have been addressing yourself this afternoon?

A. When you stop waste in the State of Texas your problem is solved.

Q. As to the ultimate recovery?

A. No, not as to the ultimate recovery.

Q. What is waste for if it doesn't affect your ultimate recovery?

A. Waste does affect ultimate recovery but it does not stop ultimate recovery.

Q. Oil selling at ten cents a barrel, is that an economic waste or a physical waste?

A. It is both at the present time.

Q. If physical waste was removed, if none of it was going to the bad under the ground and none going to the bad above the ground, would it be an economic or physical waste?

A. It would not be a physical waste if there is none under ground or above ground.

Q. You do not advocate any program any further advanced to eliminate physical waste?

A. I adovcate the principal of rateable takings as a method of eliminating physical waste, but if rateable takings are properly applied there won't be any waste.

Senator Woodruff: Will you define rateable takings?

A. By rateable takings I mean that each property or well produces in the same proportion of the wells the ability to produce. In other words to produce in accordance and rateably with their ability to safely produce oil, and produce oil at such rates as do not produce physical waste. In other words I recognize different wells at different acreages as having different abilities to produce oil without physial waste, and that rateable takings should grant those properties their rateable shares or the share in which they hold to the production of the pool. In other words if your lease has the ability to produce one per cent of the total oil of the pool without waste whatever oil is produced from that pool one per cent is entitled to come from that lease.

Senator DeBerry: Here is Senator Woodruff's bill, I don't want to cross examine you on this bill, read Section fifteen and interpet it for me.

A. The fact that any party owning or operating any particular producing crude petroleum oil or natural gas when so operating such property as to produce waste pro-

hibited by this act, if such property alone was considered, I refer to that circumstance in which I spoke of operators in that pool having a common responsibility in carrying out their operations in conformity with the highest order of conservation. Therefore if an individual might have the right or if he might temporarily be producing at a rate that did not indicate waste at that time it is out of proportion that it would not be at another time. I assume you're asking is that legitimate or is it not?

Q. Do you understand that provision under that bill that any given field or area?

A. Nobody is immune.

Q. Wait a minute. Do you understand that under that provision of that bill that in any field, say a well is running ten thousand barrels per day and not hurt anybody else?

A. It depends on what the local conditions are.

Q. From your experience could you let one well well run wild without having any effect upon another well?

A. If it is in the middle of ten thousand acres it would not hurt anybody, if it is up next to the line it would yes. It depends on the conditions.

Q. In rateable takings, over a given field, in your interpretation of rateable takings, if a man had a well out there, that showed no particular condition to indicate there was any waste above or below ground would you put him on rateable takings or let him run wide open?

A. I would put him on rateable takings.

Q. Why?

A. To conserve the gas.

Q. I asked you if his waste,

A. Here is an example, suppose he runs one thousand barrels a day and it only shows five hundred cubic feet of gas per barrel, suppose it run ten thousand barrels per day and it takes two thousand cubic feet of gas, it takes four times as much gas to produce that oil. That is the reason I say I would want an opportunity to go over this in detail, I would not want to commit myself. If he has gas enough to produce ten thousand barrels per day it certainly ought to be produced under restrictions.

Q. You have said that you advocate rateable taking. Can one man run more oil than another man because he has got a better well?

A. The condition you speak of may be an apparent condition. In other words, it may be a temporary condition, but if he pulls all that well he is affecting his ultimate recovery. In other words it don't make any difference how you produce your well, whether in the middle of a thousand acre tract or in the middle of a one acre tract.

Q. In other words, as you see it, to enforce your idea of conservation, the real tool you would use to do it would be rateable taking?

A. Yes.

Q. First?

A. Yes.

Q. Regardless?

A. Yes.

(On motion duly made and seconded, the committee adjourned until Thursday, July 23rd, at 9 o'clock a. m.)

SEVENTH DAY.

Senate Chamber,
Austin, Texas,
July 23, 1931.

The Senate met at 9 o'clock a. m., pursuant to adjournment, and was called to order by Lieutenant Governor Edgar Witt.

The roll was called, a quroum being present, the following Senators answering to their names:

Beck.	Oneal.
Berkeley.	Parr.
Cousins.	Parrish.
Cunningham.	Patton.
DeBerry.	Poage.
Gainer.	Pollard.
Greer.	Rawlings.
Hardin.	Russek.
Holbrook.	Small.
Hornsby.	Stevenson.
Loy.	Thomason.
Martin.	Williamson.
Moore.	Woodruff.
Neal.	Woodward.

Absent—Excused.

Hopkins.	Woodul.
Purl.	

Prayer by the Chaplain.

Pending the reading of the Journal of yesterday, the same was dis-